38054/B

48553

A

NATURAL HISTORY

OF THE

HUMAN TEETH,

WITH A

TREATISE ON THEIR DISEASES

FROM INFANCY TO OLD AGE,

ADAPTED FOR GENERAL INFORMATION;

TO WHICH ARE ADDED,

OBSERVATIONS

ON

THE PHYSIOGNOMY OF THE TEETH,

AND OF

THE PROJECTING CHIN.

BY JOSEPH MURPHY,
SURGEON DENTIST.

" The chaste and delicate Mouth is, perhaps, one of the first recom-
" mendations to be met with, in the common intercourse of life."

HERDER.

LONDON:
PRINTED FOR JOHN CALLOW,
Medical Bookseller, Crown Court, Princes Street, Soho,
BY T. HARPER, JUN. CRANE COURT, FLEET STREET.

1811.

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

TO

T. COPELAND, Esq.

AS A

TRIBUTE TO PROFESSIONAL MERIT,

AND A

TOKEN OF ESTEEM,

THIS BOOK

IS INSCRIBED,

BY HIS OBLIGED AND GRATEFUL FRIEND,

JOSEPH MURPHY.

ADVERTISEMENT.

To what degree of perfection the Ancients attained in the practical knowledge of preserving the Teeth, I have not been able to ascertain. The ancient Romans wore substitutes for lost Teeth made of ivory, which they fastened in with gold wire; they also rendered loose Teeth secure in their places by the same means. During the dark ages which succeeded the fall of the Roman Empire, whilst mankind were sunk in ignorance, we may suppose that the Dentist's art was totally neglected, or forgotten. We find it revived again in Paris, about the year 1700, when a few Surgeons confined their practice entirely to the Teeth. Since this period, the management of the Teeth has continued to attract the public attention.

The only Works on the Teeth worthy of notice, in the English Language, are those of Berdmore, Hunter, Blake, and Fox.* These were written principally to extend the knowledge of professional men, and not with a view to give general information. The public is very little acquainted with the nature of the Teeth, and the treatment that should be observed with respect to them; yet there are certainly few branches of knowledge of greater importance to every individual.

* Moor's Lectures on the Teeth, lately published, also contain some very valuable information.

It is with the humble hope, and ardent wish, of contributing to the comforts of society, which such knowledge would tend to ensure, that I venture to lay before the public this Treatise on the Human Teeth, and which I trust will not be found uninteresting or destitute of novelty.

It has often been observed that books for general information, on Medicine and Surgery, have frequently been productive of injury to individuals, who sought relief from the remedies prescribed in them. This is not owing to any fault in the books themselves, but to the injudicious use of medicine, and to the ignorance of the various symptoms of different diseases. In the chapter on "Teething," in this book, *warm bathing* and *lancing the gums* are recommended in cases of difficult dentition; but it is not intended that every child, who is supposed to suffer from this cause, should be inconsiderately immersed in warm water, or have their gums cut; neither the one nor the other should be resorted to without good advice.

It is with the humble hope, and ardent wish, of contributing to the health and comforts of society, which a knowledge of the history and proper mauagement of the teeth would tend to ensure, that I venture to lay this Treatise before the Public; and I trust it will not be found uninteresting, or destitute of novelty.

JOSEPH MURPHY.

Leeds, 1811.

CONTENTS.

EXORDIUM 1
A Description of the Jaws 7
Of the Muscles of the Jaws 15
Of the Nerves of the Teeth 21
Of the Gums 24
Of the Salival Glands 25
Of the Teeth in general 27
Of the Formation and Growth of the Temporary Teeth 33
Of the Formation and Growth of the Permament Teeth 39
Of Dentition or Teething 50
Of the Cortex Striatus, or Enamel of the Teeth 58
Of the Shedding of the Teeth 62
Of the Tarter of the Teeth 68
Of Caries, or Decay of the Teeth 72
Of Irregularities of the Teeth 80
Of Looseness of the Teeth 90
Of Diseases of the Gums 94
Of the Epulis or Gum Boil 99
Of Diseases of the Antrum Maxillare 105
Of the Diseases of the Alveolar Processes 108
Of Tooth Ach 112
Of Cleaning the Teeth 118
Of Tooth Drawing 127
Of Artificial Teeth 131
Of Artificial Palates 138
Of the Physiognomy of the Teeth 143
Of the Physiognomy of the Projecting Chin 156

DIRECTIONS FOR THE BINDER.

Plate the first, and its printed Description, to face each other; and both to be placed in at page 27.

Plate the second to face page 80.

ERRATA.

Page 16, line 9, omit the comma after *Pterydoideus.*

—— 40, line 2, for *Falopius,* read *Fallopius.*

—— 61, line 3, for *collisions,* read *collision.*

A

NATURAL HISTORY

OF THE

HUMAN TEETH.

EXORDIUM.

THE Teeth, besides their uses in mastication and articulation, often give the chief turn of expression to the human countenance, and may be justly termed the most prominent feature of beauty, giving grace and effect to her smiles. It therefore becomes a matter of serious concern, to every individual, to be in a degree acquainted with the history of a part of the countenance, at once so useful and ornamental. The importance of this knowledge is equally great to those who have fine

Teeth, and to those to whom Nature has been less favourable: to the first it is of consequence to know the best means of preserving them in health and beauty; and the latter ought certainly to know, that, where Nature has been deficient in this respect, she may be aided and improved.

Although it be above a century since Professors of Anatomy and Surgery began to deem the management of the Teeth of sufficient consequence to require a particular and exclusive study and practice, it is but of late years that its importance has been sufficiently known and acknowledged. It is still, however, to be regretted that the generality of people are not aware of its utility; there being many who never once reflect on a point so truly essential to health, appearance, and comfort, till forced by pain, or the total loss of teeth, to repent of their neglect.

In every period of life, an attention to this subject is highly necessary. The mo-

ther's anxious fears for the health and life of her infant are, in general, first excited at the time of teething, when the most alarming symptoms will often appear, for the great delicacy of the human structure, and its tenderness in infancy, render it extremely susceptible of disease. A derangement of the nerves and vessels, which, in infancy are larger in proportion to the body, than at any future period, produces inflammations, which extend their painful influence throughout the whole system, generating fevers and convulsions which often terminate fatally.

The period at which the temporary teeth are shed, and the permanent ones protruded through the gums, is less to be feared with respect to its influence on the health of the child. For the brain, nerves, and all the wonderfully constructed vessels through which vitality circulates, are at this time more matured and stronger. The operations of Nature, in perfecting her works, are

therefore in general performed without inflicting pain and disease. At this period, however, a countenance naturally beautiful may, without due care, be totally disfigured. Of this, examples may every day be seen; and this fact would seem to contradict the assertion, that "the face is the index of the mind," as at this time the countenance may assume a cast and form of expression, different to that which should naturally belong to it. This effect is often produced by neglect; it is also frequently the consequence of unskilful treatment. It would be as unjust as erroneous to attribute the expression of a countenance, thus marred, to the effect produced on it by the mind. How unjustifiable soever such a conclusion may in reality be, experience nevertheless proves, that an unpleasing countenance, although united with an amiable mind, often produces an antipathy which is rarely overcome. It is, therefore, a duty incumbent on parents and those who are en-

trusted with the care and education of youth, while they do justice to their minds, not to overlook their personal advantages. There is, indeed, no excuse for the neglect of what is of so much consequence; as a due regard to it would not engross more time and attention than might be bestowed upon it, without infringing on that which may be deemed more essential.

In numerous instances, it may be observed, that the Teeth are produced by nature beautiful, and arranged in regular order, without pain or the assistance of art. It is certain that those which are evenly and properly arranged, whether by nature or art, are better suited to the purposes for which they are intended, are more healthy and permanent, and more easily kept free from foulness, disease, and consequent pain. On the contrary, where the Teeth are deformed or crowded, and stand awkwardly over each other, they are generally seen foul and diseased; tartarous

incrustations and small particles of food lodging in the interstices, and constantly accumulating, soon become fetid, create disorders in the Teeth and gums, and taint the breath. The inspiration of breath, thus tainted, must certainly be deleterious, and will not fail, however slowly, to affect the health of the body; while its expiration is considered a serious nuisance to all who come within the sphere of its influence.

A concise account of the jaws precedes the history of the Teeth, in the following chapters.

OF THE UPPER JAW.

THE upper jaw, and that part of the face which it forms, consists of thirteen bones, which are denominated as follows: ossa maxillaria, ossa malarum, ossa nasi, ossa lacrymalia, ossa spongiosa inferiora, and ossa palati; of each of these there are two—the thirteenth is a single bone, called the vomer.

OSSA MAXILLARIA.—These bones constitute the greater part of the upper jaw, of the nose, and of the roof of the mouth. They have many processes and depressions, which render their figure extremely irregular, by the union of which, and other bones, are formed the cavities, called the maxillary sinuses. These cavities are situated beneath the cheek-bones, and are lined with a continuation of the fine membrane which lines the cavities of the nostrils and

frontal sinus: this membrane is called the schneiderian, from the name of its discoverer; and upon it the olfactory nerves are distributed. The upper sides of the maxillary bones form the lower and internal circumference of the orbits; and in their lower sides are the sockets for the teeth. They have several holes for the admission of nerves and vessels; the principal of which are, the foramen orbitale externum, the foramen incisivum, and the posterior palatine foramen, which admits the maxillary nerve to pass to the teeth. These bones are joined to the os frontis, and ossa lacrymalia, at the great angles of the eyes, and to each other under the upper lip.

OSSA MALARUM.—These are the prominent bones which form the cheeks. Their figure is nearly quadrangular; they join the os frontis, at the little angles of the eyes, their upper sides forming the lower and external circumference of the orbits.

They are smooth and convex on the surface, and unequal and concave within. The internal sides join the ossa maxillaria; and the external sides are joined by long processes to the temporal bones, which union forms an arch, called the zygoma.

OSSA NASI.—So named from their situation and use, forming the upper part or bridge of the nose. They are thin bones, of an irregularly oblong square figure, externally convex and smooth, and internally concave and rough. They are joined above to the frontal bone—below, to the cartilages of the nose—behind to the maxillary bones—in front, to each other—and are supported internally, by the partition between the nostrils, called the septum narium.

OSSA UNGUIS, OR LACRYMALIA.—These bones bear some resemblance to the finger-nail; from whence their name unguis. They are also called lacrymalia from the water of the eye passing over them into

the nose. Their situation is in the great angles of the eyes, separating the orbit from the cavity of the nose. Their surface, next the eye, is concave, and forms part of the orbit on which the eye-ball moves. They join above with the os frontis—below, with the maxillary bones—and, internally, with the ethmoid bone.

OSSA SPONGIOSA INFERIORA are so called from their spongy texture. These bones form part of the nose, enlarge the surface, and extend the organ of smelling; they also assist in forming the under part of the lacrymal duct, the orifices of which into the nose are concealed by them.

OSSA PALATI are bones of a very irregular figure. They form part of the roof of the mouth, of the nose, and of the orbits. The portions which form part of the palate are irregularly square and concave; and, though thin, are firm and strong. They have many processes, which join the other bones of the face.

THE VOMER is the thirteenth bone of the upper jaw. It has its name from the resemblance it bears to the ancient plough-share: its situation is in the middle of the lower part of the nose; the partition of which, in that part, it forms. This bone is smooth, thin, and of a solid substance; it enlarges the organ of smelling, by allowing place for expanding the membrane of the nose.

OF THE UNDER JAW.

The under jaw consists of one extremely moveable bone, in figure resembling the letter U. It is at first composed of two bones, the ossific fibres of which unite with each other at the chin, soon after birth, and by complete ossification become one bone; this union is called symphysis.—This jaw is formed of two laminæ, whose surface is hard and smooth—its internal substance is cellular: its base is thick, compact, and hard, particularly at the chin, where it is most exposed to injury. It has two processes on each side, the anterior of which, called the coronoid processes, end in points which pass under the zygomatic arches. The temporal muscles are inserted into these processes. The posterior processes, called condyloid, or articulatory processes, are thicker and less

elevated than the coronoid processes—they terminate in oblong, smooth heads, or condyles, supported by a cervix. To each condyle is attached a strong moveable cartilage, which is also attached to the cavity and eminence, which are for that purpose in the temporal bones; they are further strengthened in their situation by a strong ligament attached to the temporal bones, and to the cervix of the condyles on each side. Thus, the under jaw is firmly united to the scull; the loose intervening cartilage greatly facilitates its lateral motion, so necessary in manducation. The lower edge of this jaw is called its base, and the end of its base its angles. In this bone are four holes, two internal, near the processes, and two external near the chin: by the internal holes enters a branch of the fifth pair of nerves, an artery from the carotids, and a vein from the juglars, branches of which pass into the fangs of the teeth; these vessels emerge

again by the external holes, and spread upon the chin. That part of the bone in both jaws which immediately surrounds the fangs of the teeth, is called the alveolar process. The growth of this process commences with that of the teeth, and advances with them to maturity. The existance of the teeth, and alveoli, so entirely depend on each other, that the loss of the former is inevitably followed by the waste and absorption of the latter: thus the jaw bones of persons become edentulous through age, have no sockets for teeth, but have a smooth and solid surface.

OF THE MUSCLES OF THE JAWS.

The motions of the lower jaw are performed by the action of muscles with which the head and face are amply supplied, having a proportionably greater number than the other parts of the body.

By the action of these numerous muscles, all the passions and energies of the mind are depicted on the human face; by them the countenance is rendered "the theatre on which the soul exhibits itself."

The structure of muscles is singularly curious and beautiful. They are found to be composed of small fleshy and tendinous fibres, arranged parallel to each other in fasciculi, and tied together at small distances by cellular membrane, having also an outward membraneous covering. The fibres which compose the fasciculi are formed of other smaller fibres, also enclosed in

a membrane. These fibres have nerves, veins, and arteries distributed throughout them.

The elevation, depression, and lateral motions of the lower jaw, are performed by five pair of muscles, one on each side forming the pair.

They are called temporalis, masseter, pterygoideus, internus, pterygoideus externus, and digastricus.

The act of performing manducation engages the combined action of many muscles besides the above-mentioned, particularly of the buccinator and styloglossus.

TEMPORALIS, OR CROTOPHITE MUSCLE. —This is a large muscle arising from the bones at the side of the head. It is broad at its origin, its fibres descending, are gathered into a narrow compass, by which it acquires strength, and, passing under the zygoma, is inserted by a strong tendon, to the coronoid process of the lower jaw,

which process it envelops down nearly to the molares.

The action of this muscle raises the lower jaw, and presses the teeth close.—The locked jaw is a spasm of the temporalis.

MASSETER is a strong, thick, short muscle, situated on the lower part of the side of the face. It arises from the superior maxillary bone, and part of the zygoma: from whence descending in an oblique direction, it passes over the coronoid process down to the angles of the lower jaw, where it is inserted. It forms the convexity of the back part of the cheek.

The action of this muscle raises the the lower jaw, and moves it a little forwards and backwards.

PTERYGOIDEUS INTERNUS is a strong muscle, situated within the lower jaw, opposite to the masseter. It arises from

the internal pterygoid process; is strongly connected with the palate bones internally; and is inserted into the lower jaw, near the angle, whence it spreads upwards.

The action of this muscle raises the jaw, and gives it lateral motion.

PTERYGOIDEUS EXTERNUS arises from the external pterygoid process. Its position is rather horizontal, crossing to the neck of the condyle of the lower jaw, where it is inserted.

Its action gives to the under jaw a rotatory motion, and pushes it forward beyond the upper jaw.

DIGASTRICUS arises from a process of the temporal bone. It comes forward, and downward, beneath the ear, crossing the upper part of the vertebræ of the neck in an oblique direction: and, after passing through one of the muscles of the os hyoides, is bound by a strong ligament to the os hyoides, from which it receives an addition of muscular fibres; and, running

obliquely forwards and upwards, is inserted into the under anterior edge of the lower jaw, at the chin.

The action of this muscle opens the mouth by depressing the lower jaw, and drawing it backwards. Besides the constant action of the digastric muscles in mastication, they also assist in deglutition, by their action on the upper part of the fauces, or throat.

The action of the BUCCINATOR, and STYLOGLOSSUS, are of considerable use in mastication. The former arises from the back part of the upper and under jaw bones, and comes forward within the cheek, a considerable portion of which is formed by it. It is of a triangular figure, is broadest behind, forwards it becomes narrower, and is inserted at the angle of the mouth inside. By its action in mastication it contracts, and presses in the cheek, by which the food is kept between the teeth, from the exterior.

The STYLOGLOSSUS derives its name from its origin, which is in a process of the temporal bone called the styloid process, from which, extending forwards and downwards, in an oblique direction, it is inserted into the root of the tongue, and running along its sides forms a portion of it. The action of the styloglossus in mastication is opposed to that of the buccinator: it draws the tongue backwards, and gives it lateral motion, by which the food is kept between the teeth, internally.

OF THE NERVES.

The Nerves are the conductors of all sensation. They have their origin in the medullary substance of the brain, of which, and the spinal marrow, they are formed.

A nerve is composed of a number of minute fibrous threads, lying parallel to each other, and is covered by a continuation of the fine membrane, which envelops the brain, and invests the inside of the scull. The fibres which form the nerves are minute beyond conception: when separated from each other into threads, so small as to be scarcely perceptible to the naked eye; these threads, viewed in a microscope, appear to be formed of still smaller threads lying also parallel to each other. These divide into branches, and as they spread through the

body, they expand their minute filaments throughout every part of it.

The nerves are divided into two kinds—the cerebral, or those which issue from the brain; and the spinal, or those which proceed from the spinal marrow. Of the former there are generally accounted ten pair, the fifth of which, called trigemini, is the largest. Each nerve of this pair divides into three branches. The first branch is called the opthalmic or orbital, the second the superior maxillary, and the third the inferior maxillary.

The ophthalmic, after having given off a branch, to unite with a branch of the sixth pair of nerves, divides into three branches, which are distributed to the orbits, and neighbouring parts.

The superior maxillary nerve divides into three branches, the first of which gives branches to the internal pterygoid muscle, to the eustachian tube, and to the soft palate; the second enters a foramen of the

upper jaw, near the dens sapientiæ, and distributes branches to the teeth; the third spreads its branches on the cheek, nose, and lips.

The inferior maxillary nerve divides into two branches, the first of which unites with the seventh pair, or auditory nerves, which forms the organ of hearing; it then branches off into the sublingual glands, and into the tongue: the second enters the internal foramen of the lower jaw bone, and supplies the teeth with nerves: it emerges again out of the external foramen, and spreads upon the chin and lips.

The ramification of the fifth pair of nerves gives rise to many sympathetic affections, and a great diffusion of pain when the teeth are diseased; their inosculation with the auditory nerves produces that disagreeable nervous vibration called the tooth edge, with which many people are very sensibly affected when harsh and grating sounds strike upon the ear.

OF THE GUMS.

The Gums, a red and very vascular substance of a peculiar kind, in appearance and elasticity bearing some resemblance to leather, are situated on each side the alveolar processes, which they closely invest; and by surrounding the necks of the teeth, and covering the bony partitions between, are a means of keeping them firm in their places. They are covered by a smooth membrane, which is continued from the lining of the cheeks.

The gums seem to possess very little sensibility, as it may be observed that they are often accidentally wounded without causing the least pain: they are, however, subject to disease.

OF THE SALIVAL GLANDS.

Within the mouth are the orifices of the ducts of the salival glands.

The saliva is a fluid separated from the blood, which gives to the mouth the moisture that belongs to it, in its natural and healthy state; in mastication it mixes with the food, and by moistening and dissolving it, prepares it to be acted upon by the digestive powers of the stomach.

The principal glands, or sources of the saliva, are three pair: the chief of which, called the PAROTIDS, are situated one under each ear. The ducts from these pass forward within the substance of the cheeks, pierce the buccinator muscles, and discharge themselves into the mouth.

The mumps is an inflammatory disorder peculiar to these glands.

The second pair, called the MAXILLARY glands, are situated within the lower jaw, under its angles. The ducts of these glands are long, they pass into the tongue, and discharge themselves, under it, into the mouth.

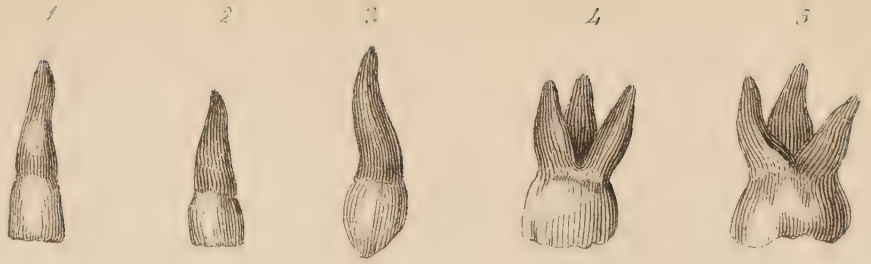
The maxillary glands are often affected with scrofula.

The third pair, called the SUBLINGUAL glands, are situated on the muscles, under the anterior part of the tongue. Their execretory ducts are several, small and short, each having an orifice which discharges into the mouth, close to the gums, behind the front teeth of the under jaw.

Besides these three principal pair, there are a great number of lesser glands within the cheeks and lips. The membranous covering of the palate is also full of small glands, whose excretory orifices eject their fluid into the mouth.

Plate 1st

Row 1



Row 2

Row 3

Row 4

J. Mills Sculp

The annexed Plate represents the Temporary and Permanent Teeth of one side of the Upper and Under Jaw, that is, from the front Incisor to the last Molaris. The Teeth on each side being perfectly alike, a representation of all would be superfluous.

TEMPORARY TEETH.

Upper Jaw.	Under Jaw.
Row 1st.	*Row 2d.*
No. 1. Front incisor.	No. 1. Front incisor.
2. Lateral incisor.	2. Lateral incisor.
3. Cuspidatus.	3. Cuspidatus.
4. First molaris.	4. First molaris.
5. Second molaris.	5. Second molaris.

PERMANENT TEETH.

Upper Jaw.	Under Jaw.
Row 3d.	*Row 4th.*
No. 1. Front incisor.	No. 1. Front incisor.
2. Lateral incisor.	2. Lateral incisor.
3. Cuspidatus.	3. Cuspidatus.
4. First bicuspis.	4. First bicuspis.
5. Second bicuspis.	5. Second bicuspis.
6. First molaris.	6. First molaris.
7. Second molaris.	7. Second molaris.
8. Third molaris, or wisdom tooth.	8. Third molaris, or wisdom tooth.

OF THE TEETH IN GENERAL.

The Teeth are composed of two substances—compact and solid bone, of which they are principally formed; and enamel, so called from the resemblance its smooth polished surface bears to that substance.

A tooth is divided into three parts: the crown or body, the neck, and the root or fang. The crown is that part which projects from the gum, and is strongly covered by the hard crystallized coat called enamel. The neck is that part where the enamel terminates, and which is closely embraced by the gum. The fang is that part which is inserted into the jaw, and is enclosed by the socket. At the point of the fang there is a small hole for the admission of nerves and vessels, which enter and ramify on a membrane that lines the canal within the tooth. These vessels supply the tooth with

the circulating principles of life and feeling. The fang is to the tooth what the root is to the plant—it keeps it firmly in its position, and is the medium through which it receives vital nourishment.

Mankind is furnished with two sets of teeth; the first are called temporary or milk teeth, their existence being limited to the age of infancy, they are twenty in number,* and are of three kinds, viz: incisores, cuspidati, and molares. There are in each jaw four incisores, two cuspidati, and four molares. These are shed, and are succeeded by the second set, which are called adult, or permanent teeth. When these are completed they are thirty-two in number, sixteen in each jaw, and are of four kinds, viz:† incisores, cuspidati, bicuspides, and molares. Those of the upper and under jaw, whose situations correspond, have the same denominations, and their

* See plate I. † See plate I.

crowns nearly resemble each other in figure. They are arranged as follows: in front of the upper jaw are four incisores, or cutting teeth, so called from their office of cutting, or dividing the food: the two centre of these are the largest. Next to these are the cuspidati, one on each side; they derive their name from cuspidatus [spear-pointed], they are also called canine, and eye teeth, from the resemblance they bear to dog's tusks, and from their long fangs approaching near to the eye. Next to the cuspidati are the bicuspides, two on each side: they have their name from their double points. Last in order are the molares, or grinders, three on each side: the latter familiar name sufficiently bespeaks their office. The third molares are called dentes sapientiæ, or wisdom teeth, from their coming about the period when the qualities of the mind are supposed to be matured. The arrangement of the teeth in the lower jaw is precisely the same as described in

the upper, and they bear the same names, but there is some difference in their size and figure. The principal dissimilarity consists in the incisores of the under jaw being nearly all alike, whereas in the upper jaw the two lateral incisores are smaller than the front, and are generally rounded on their posterior edges. The incisores have single fangs, which are long and pointed; the cuspidati have also single fangs—they are longer and thicker than those of the incisores. I have sometimes found these teeth with two fangs. The bicuspides have mostly but one fang, which has the appearance of two fangs joined together, the end of which is often separated into two points. The molares of the upper jaw have generally three fangs, though sometimes four, and even five; those of the under jaw have two and sometimes three fangs. The dentes sapientiæ have commonly two fangs, sometimes they have three, and often only one.

The fangs are covered by a thin periosteum, or membrane, full of vessels, which also lines the cavity of the socket, and is the means by which the articulation of the teeth is rendered more firm and steady,

The teeth are secured in their sockets by a species of articulation called gomphosis, which is similar to the union of a peg, or nail, with wood into which it has been driven.

The curve described by the alveoli, and teeth of the upper jaw, being the largest, all the teeth project a little over those of the under jaw; the prominent points of the molares and bicuspides falling into the depressions or the angles formed between those opposed to them.

The cuspidati of the upper jaw, when in contact with those of the under, rest their points between their corresponding teeth, and the bicuspides of the lower jaw. The four incisores of the upper jaw project a little beyond those of the under, closing

over and nearly covering them; this being the best possible position to effect their purpose of cutting, with the greatest facility. The situation of the cuspidati, bicuspides, and molares, with respect to each other, is also such, as by the lateral motion of the jaw to effect the purpose of manducation with that ease with which it is performed.

FORMATION AND GROWTH OF THE TEMPORARY TEETH.

Naturalists and anatomists, while employed in examining the works of the Creator, are often struck with wonder and astonishment, and mentally exclaim, " How inexpressibly beautiful, how grand, how incomprehensible the means by which the wonders of the creation are effected!" Nothing is perhaps more calculated to excite this kind of reverential wonder, than the manner in which the teeth are formed, as well in various animals, as in man.

When the jaw bones have scarcely attained their shape, those parts in which the teeth form and arrange themselves, are grooves, in which the vessels lie whose office it is to collect, and deposit a pulpy matter, destined to form the teeth. In a fœtus of about the fifth, or sixth month,

these pulpy substances are found arranged in their places, each enclosed in a vascular, membraneous sac, or bag, ten in each jaw. At this period ossific fibres have shot across, and begun to divide the groove into compartments, each compartment containing its sac of pulp. These divisions of the grooves, are the commencement of the sockets which are to contain the teeth.

About the sixth, or seventh month, ossification commences on the cutting edges of the incisores, and on the prominent points of the molares. The bodies of twenty teeth, ten in each jaw, are formed at birth. At this time the bodies of the teeth are ossified only on the external parts, the unossified pulp within being covered by a shell of bone.

As the teeth ossify and attain shape, the sacs or investing membranes adhere closely to the necks, as soon as those parts are formed; the office of these membranes is now to secrete and deposit over the crowns

of the teeth they envelop, a whitish, earthy substance, which crystallizes, and becomes the hard and beautifully polished armour of their bodies, called the enamel. As the teeth proceed in growth, and harden into bone, they lengthen from the bodies; those of the under jaw downwards, and those of the upper jaw upwards: these parts, as they lengthen, gradually assuming form, are shaped into fangs; the sockets at the same time growing round, and closely embracing them. As the teeth mature, their membraneous envelopes are dissolved, or absorbed, and are taken up into the mass of the blood, each having effected its destined purpose.

From birth, until the period when the teeth begin to appear, the gums would not alone be sufficient to bear the necessary and frequent pressure they are liable to sustain, without some support. To answer this purpose, and at the same time to protect from injury the embryo teeth, together

with the delicate vessels operating to perfect their formation, the all-wise Disposer of Nature has so ordered, that the outer edges of the sockets, or alveolar plates, should grow higher, and turn a little over, so as to approach each other. The gum hardens over this bony support; and thus the double purpose is effected, of giving strength and hardness to the gum without, and of shielding the growing teeth within.

About the fifth or sixth month after birth, sometimes sooner, and often later, the two front incisores of the under jaw appear through the gums, and, frequently, with so little indisposition or pain to the infant, that the mother is surprised and delighted by unexpectedly feeling them against her breast, or by touching them with a spoon.

Though the teeth are formed in pairs, they generally make their appearance one at a time, the first protruding two or three days, sometimes more, and sometimes less, before its fellow.

About a month after the protrusion of the two front incisores of the under jaw, those of the upper jaw appear, after which the lateral incisores of the under jaw. Soon after the lateral incisores of the upper jaw pass through the gums. The canine teeth, which are next in order, do not appear until after the anterior molares; the latter are cut first in the under jaw, and soon after in the upper. The cuspidati, or canine teeth, appear next through the gums; and, lastly, the large molares are cut. These complete the shedding or temporary teeth. There are frequent exceptions to the above-mentioned order of their appearing through the gums: sometimes the side-teeth are cut sooner than the front, and the grinders sooner than the lateral incisores. This irregularity of their appearance is called cross-cutting, and has sometimes been observed to be attended with more than usual irritation and pain.

The twenty shedding teeth are in general

completed in a child of about two, or three years old.

There are many instances of children being born with the two front teeth of the under jaw cut; but these, like other premature productions of nature, have not been perfected. They are without fangs; their chief attachment is, consequently, to the gum, which they are apt to irritate, and render painful. It is generally found expedient to extract them.

FORMATION AND GROWTH OF THE PERMANENT TEETH.

The investigation of this subject engaged the attention of the great father of medicine, Hippocrates, whose works are justly esteemed the highest authority for ancient anatomical information. Since the time he wrote, which is above two thousand years ago, it has continued to be investigated by the most learned professors of anatomy and medicine. Many strange and curious opinions were from time to time published, respecting the origin and formation of the permanent teeth. By some it was supposed that they were formed from the roots of the milk teeth, and by others, from a latent seed deposited in the jaw for that purpose, by the economy of nature. The former was the opinion of the great and learned Vesalius, and was supported by

many eminent anatomists; the latter was that of Falopius. These ingenious hypotheses were overturned by Eustachius, Hemard, and Albinus, who investigated the subject with great accuracy and anatomical precision. They demonstrated, that the formation of the permanent teeth commenced before birth, having found their rudiments forming in sacs, in the same manner as those of the temporary teeth; but the merit of discovering the connexion which subsists between the permanent and temporary teeth, and that the former derive their origin from the latter, was reserved for Doctor Blake, of Dublin, and first published by that gentleman in his inaugural dissertation, at Edinburgh, in the year 1798.

While the temporary teeth are forming within their membraneous envelops, they are endued with a power of propagating those which are to succeed them. The rudiments of the permanent teeth are

formed by each investing membrane of the milk teeth sending off small fibrous branches from the inside of their upper parts. These fibrous branches, gradually acquiring size and form, become other sacs, or investing membranes, within which is deposited the ossific mucilaginous matter destined to form the permanent teeth.—From the sacs of the incisores, and cuspidati of the first set, the rudiments of those of the second set originate: from the sacs of the first grinders spring those of the bicuspides, and the sacs of the latter send off fibres for the commencement of the permanent molares. From the first of these the second originate, and from the second the dentes sapientiæ proceed.

On examining the jaws of a child at birth, ossification is generally found to have commenced on the cutting edges of some of the permanent incisores, and on the prominent points of the first permanent molares.

The situation of the permanent incisores and cuspidati while they are forming, is behind the incisores and cuspidati of the milk teeth: the bicuspides form nearly under the temporary grinders, which teeth they are designed to succeed.

Although the permanent teeth are formed within the sockets of the temporary, they soon become divided from each other by a partition of bone; still, however, the sacs of both continue to be connected by the membranous fibres from which they sprung: for as the new sockets close upon their teeth, small holes remain at top, through which the connecting membranes pass.

The structure and arrangement of the temporary teeth, with their sockets, as they attain perfection, gradually arise*, while the permanent teeth remain beneath them in the jaw, receiving from their numerous

* The word arise is applied to the lower jaw, the same process takes place in the upper jaw, in a contrary direction; the face consequently lengthens.

vessels a power and disposition to form and become perfect. As the temporary teeth become elevated above the permanent, the connecting membranes lengthen in proportion, and are attached to the necks of the milk teeth, when the latter have appeared through the gum. This process exhibits to the eye of the anatomist and naturalist a most curious and beautiful specimen of the economy and disposition of nature, towards the perfecting of her works.

As the permanent teeth proceed in growth they have a tendency to press forward, in order to possess their destined stations; and if not impeded by the roots of the milk teeth, they are found so forward when the latter are shed, as to appear under them in their proper places. The size of the teeth is determined by the quantity of ossific matter deposited for their formation. When once the crowns of the teeth have passed through the gums, they have attained their full growth, and never after

increase in size, or alter in shape. The second teeth of children are therefore as large as those of adults. The temporary teeth begin to shed, in general, about the sixth or seventh year, at which time the permanent begin to appear, and for the most part in the following order: First the two front incisores of the under jaw; and about the same time the first four permanent grinders. Soon after the front incisores of the upper jaw; next the lateral incisores of the under jaw; and then the lateral incisores of the upper. The anterior bicuspides appear next, and shortly after the posterior bicuspides. The middle grinders and cuspidati which come about the same time, are the next that appear, the latter are completed about the fourteenth, or fifteenth year. The posterior grinders, or wisdom teeth, are more uncertain in the time of their appearance than the other teeth; it is, however, generally between the eighteenth and thirtieth years, sometimes later,

and in many instances they never emerge from the jaw bone.

The four first permanent grinders frequently appear a considerable time before any of the temporary teeth are shed; circumstances of this kind have led some medical writers into error, respecting the number of the milk teeth, who were not perfectly acquainted with the physiology of the teeth.

In many instances the first teeth are destined to last through life, as no others form, or if they form they never come to perfection. Natural deficiencies of the permanent teeth often occur. I have met with several cases wherein the cuspidati never had appeared, and others wherein the lateral incisores were naturally wanting. Some persons have been known to cut teeth at a very advanced age, this has been supposed an effort of nature for a second renewal of the teeth; but the appearance of a third set of teeth has never been pro-

perly authenticated*; until it is, I must remain of opinion that those teeth which

* It may be necessary to notice here case the 20th, in the Medical Observations and Enquires, vol. 3. page 178. "*Of three different growths of teeth succeeding one another* "*in the upper jaw of a child, by Mr. Symmonds, surgeon at* "*Bath.*"

This case, I believe, has not been investigated, and therefore remains upon record, as a well established fact.

The case alluded to was that of Miss Hale, a child of four years old, who, in three days after the crisis of the measles, was seized with a fever, accompanied with a swelled face, and pains in the teeth; her gums became ulcerated, and having sloughed off, discovered that part of the palate and jaw bones were diseased. In due time the diseased bones exfoliated, and while Mr. Symmonds was examining them, they came away suddenly in his hand together with two of the teeth, "*and exposed to view two small white teeth,* "*like those of an infant that have newly cut the gums.*" Part of the lower jaw also came away by exfoliation, "*and* "*discovered three teeth like those which were in the upper* "*jaw. On the following day, one of the new teeth came* "*away and appeared a mere shell resembling that of a* "*fœtus. In a week afterwards, both the new teeth dropped* "*from the upper jaw.*" From this period Mr. Symmonds saw the child but twice in nearly two months; he then, to his "*great surprise, observed a new tooth just shooting* "*through the gum in the upper jaw, in the place of one of* "*the teeth that had dropped out.*" This was soon followed by another, which, Mr. Symmonds says, became firm, and serviceable, and observes: "*Thus has this child had three*

come late in life, are the natural permanent teeth, which had till then remained latent

"*different growths of teeth in her upper jaw before she was* "*five years old.*"

The only thing which appears extraordinary in Miss Hale's case is that neither Mr. Symmonds, nor Dr. Hunter who read the case to the Medical Society, have attributed the above appearances to the true cause, and that they did not seem to know, that the same appearances might always be observed, under similar circumstances: for whenever the embryo permanent teeth are prematurely deprived of their natural covering, they will be found deeply situated in the jaw, partly formed, or, as Mr. Symmonds observes, "*mere shells.*" The teeth which Mr. Symmonds discovered were the natural permanent teeth, and in all probability, the points of the bicuspides, which had not united, and were in that state "*small, and similar to the teeth of an infant* "*that have newly cut the gums.*" When these had fallen out, it is not surprising that two more of the permanent teeth or their partly-formed crowns, should appear in the situations of those which had come away. The temporary teeth are twenty in number, and the permanent thirty-two; the latter must consequently be much crowded while forming, which will account for their appearing above each other. Although the last teeth that Mr. Symmonds discovered, might have retained their places longer than the first, on account of their being more perfectly formed; yet I am of opinion, that they never came to perfection.

This case is not clearly stated by Mr. Symmonds; he does not say of what description Miss Hale's new teeth were; probably he saw only the points of them, and could

in the jaw. If a third set ever did appear, the teeth must have been formed very early in life, and before the second teeth had appeared through the gums, as it is fully ascertained that this is the period at which they propagate.

A few instances have occurred of persons who never had any teeth. One case was communicated to me by a lady on whose veracity I place the highest dependance. It is very well known to his numerous private friends, as well as to the gentlemen of the faculty in Lincoln, and its vicinity, that the late Mr. Bromhead of the above place, never had any teeth. In this gentleman's

not determine their shapes. I am, however, persuaded that she had but the usual number of teeth, and that those which Mr. Symmonds imagined to be a second, and third growth, were her permanent teeth, some more advanced in their formation than others, which were prematurely brought to view by the loss of the gums, and part of the jaw bones; and that if her teeth were examined at a more advanced period, there would appear a deficiency of as many of her permanent teeth, as she had lost by disease in her infancy.

case, Providence seems to have made full compensation for the deficiency, as he experienced no inconvenience whatever from it, his gums being sufficiently callous to masticate with, nor did his countenance appear to be disfigured by the want of teeth.

OF DENTITION, OR TEETHING.

Most of the diseases to which infants are liable are generally supposed to originate in, or be greatly influenced by, the growth and protrusion of the teeth. There are, however, many causes more likely to derange the tender infantile system than dentition. Nature is often found to deviate from a regular mode of action; obstructions may therefore arise to the means she usually employs for throwing off morbid or redundant fluid, in external irruptions, which, together with other causes, generate fever, diseased action of the intestines, and dangerous spasms, which have been indiscriminately attributed to the teeth.

The common expression of cutting the teeth has arisen from an opinion, that the growing teeth make a passage for themselves through the gums by laceration; which

certainly is not the case. As the teeth rise, a waste or absorption of the gums takes place in order to let them pass through. This is often effected so easily as not to occasion any symptoms of pain or uneasiness.

The absorption of the gums to make way for the teeth is as certain an effect of nature as the growth of the teeth; sometimes, however, the teeth advance more rapidly in growth, than the gums absorb for their emergence; this occasions a tension and pressure of the vessels in the gum, and on the pulp, vessels, and nerves, at the growing roots of the teeth: and from hence arises painful and difficult dentition. The gums appear swoln and inflamed, there is an increased flow of saliva, the infant is restless, cries, and frequently puts its hands to its mouth. From the effects of local inflammation, and nervous sympathy, the whole body may become dangerously affected; in such cases the most sudden and happy effects have been pro-

duced by lancing the gums. The operator should be perfectly acquainted with the connexion that subsists between the temporary and permanent teeth, and be careful to avoid cutting the connecting membrane, as such a circumstance might injure, or prevent the formation of the permanent teeth. Whatever contributes to promote the operations of nature will make teething easy; such as frequent bathing in warm water, friction of the body and limbs, particularly the back and loins, good air, exercise, and wholesome food, and above all a cool and open habit of body. The gums should be often rubbed by the mother's or nurse's finger, to which a little honey, or sirup may be applied*. The friction will have a tendency

* An infant is always pleased at having its gums rubbed with the finger; the friction appears to give ease, as it often causes the child to cease crying instantly. The knowledge of this fact has given rise to the invention of various quack teething applications, all equally inefficacious; for no medicinal application to the gums can have the least effect upon the internal structure or vessels of the teeth.

to stimulate the action of the vessels, and to promote the process of absorption in the gums. The child should be allowed the free use of its own fingers in its mouth. The idea that a child's sucking its fingers will prevent their growth, is a prejudice, without any foundation in truth.

Lancing the gums is generally productive of the most salutary effects in cases of difficult dentition; but it is an operation which has been, and is still frequently performed unnecessarily, and without skill, thereby laying the foundation of the premature destruction, not only of the milk teeth, but of their successors.

The old erroneous opinion that the teeth as they grow, cut their way mechanically through the gums, first suggested the idea of assisting them in their protrusion, by the

Sirup, or honey, may be applied to the finger, when the gums are rubbed, because their sweet taste is pleasing to the infant, and because their aperient qualities may be of service.

friction, and pressure of hard smooth substances on the gums. This introduced the injurious and dangerous custom of furnishing a child with a coral. The use of a coral is still recommended by a modern medical writer of celebrity, in opposition to the opinion of those who have made the teeth their exclusive study, on the principle that "the young of all animals who suck, as "soon as their teeth begin to shoot, are "strongly inclined to gnaw such things as "afford a little resistance. This may be every "day observed in domestic animals*."

The young of domestic animals, from their nature, and the playfulness of youth, are apt to bite at every thing that falls in their way, whether hard or soft. Infants are not more discriminating than puppies, in their choice of playthings, and will carry to their mouths, whatever they may hold in their hands, until what we call instinct in the one,

* Doctor Underwood. Diseases of Children, published in 1805, vol. i. page 206.

and reason in the other, enable them gradually to select, with some degree of judgment, objects suited to their touch, and taste. With respect to the effects of teething, no kind of analogy subsists between children, and the young of animals of the brute creation, as the latter were never observed to suffer from the growth, or emergence of their teeth. To mankind alone the teeth are a source of pain almost through life. There must, indeed, be a great want of reason and argument to favour the opinion of the utility of a coral, or other hard substances to forward the progress of dentition, when the only thing adduced in support of it, is the propensity of young animals to gnaw.

The pressure of hard substances on the gums of an infant is calculated to increase inflammation, where there is such a tendency; or to produce such an effect, where it would not have happened, if nature were left undisturbed.

Doctor Blake says of the coral, that "it is a most dangerous weapon, put into "the hands of children to destroy themselves; for, as the teeth arise and become slightly elevated above the edge of "the socket, those hard bodies press and "bruise the gum between them, and the "sharp points, or edge, of the tooth underneath: inflammation and its consequences undoubtedly follow; and in this "way, I am firmly persuaded, the lives "of thousands of children have been "lost."*

The permanent teeth are in general cut without pain or inflammation, but sometimes their appearance is accompanied by both, and in some instances chorea has been the consequence of the irregular or difficult protrusion of some of the permanent teeth. The coming of the wisdom teeth is frequently attended with consi-

* Dr. Blake's Essay on Teeth, page 127.

derable pain and inflammation, when for want of room they come close under the coronoid process of the under jaw, or in the tubercle of the upper. The pain attendant on such cases, is generally removed by freely opening, or by cutting away that part of the gum which covers them. In some cases of this kind, the best practice is to extract the middle grinder, which, by giving to the wise tooth sufficient room, soon relieves the painful effects occasioned by the want of it. In other cases, the wise tooth should be extracted as soon as it passes through the gum.

The foundation of all reasonable practice in the treatment of the teeth, must undoubtedly be in a perfect knowledge of their nature and structure: speculative practice is ever vague and uncertain.

OF THE CORTEX STRIATUS, OR ENAMEL OF THE TEETH.

The soft earthy substance prepared to be crystallized for the enamelled covering of the teeth, is deposited by the investing membranes on the bony lamellæ of the crowns of the teeth*. Crystallization commences on the extreme points of the teeth in striæ, or fibres, the ends of which are directed from the circumference to the centre of the tooth. As it acquires hardness and perfection, the striæ are beautifully arranged in arches over the body of the tooth, with their points directed so as to act upon substances in mastication.—This admirable disposition of its fibres gives it durability and strength to resist,

* See page 33.

without being injured, the frequent actions which it has to sustain.

The name of cortex striatus, given to this smooth covering of the teeth by Doctor Blake, is certainly more appropriate than that of enamel, as the latter implies a vitreous quality which does not belong to it. Vitreous substances are reducible to fluid by heat, but not by acid.

A tooth may be heated until the bony part is burned black, before the enamel cracks or loses its colour; but if it be immersed in nitric or vitriolic acid, the enamel is decomposed, and may be rubbed off with the finger.

When a tooth appears through the gum the enamel has attained its utmost perfection, as it never after acquires additional substance, or hardness. It is about half a line in thickness, and is thicker on the cutting edge, or grinding, surface than on any other part of a tooth; it is almost as hard as tempered steel, and if smartly

struck against that substance, sparks of fire will be emitted.

The enamel is often naturally imperfect or deformed: the rough or pitted is of this kind. Sometimes the incisores are only partially covered with enamel, having indented spots on them where it had never formed.

The rough or pitted enamel, when it disfigures the teeth, is often capable of being greatly improved by filing.

It is generally believed, that the decay of a tooth inevitably follows a fracture of its enamel. Experience proves this to be an erroneous opinion, as parts of the teeth are often accidentally broken, the remaining parts of which continue perfectly sound, unless the fracture extend to the canal within the tooth. In many cases too, the filing off of the enamel, in consequence of caries, is found to stop the progress of the disease, and to preserve the rest of the tooth, instead of accelerating its destruc-

tion: neither is it uncommon to see half the crowns of the incisores worn away by their collisions in mastication, and the remaining half perfectly free from disease.

OF THE SHEDDING OF THE TEETH.

Various speculative opinions have been ingeniously conceived and supported by medical, and anatomical authors, upon this subject. By some it was supposed, that when the permanent teeth were formed from the roots of the first set, the crowns of the latter, having no farther attachment, fell out: by others, that the roots of the milk teeth were destroyed by the friction, which the growth and pressure of the second teeth against them occasioned.—Van Swieten, the learned commentator on Boerhaave, was of opinion, that the milk teeth had no roots; but that if they were not shed, or taken away in proper time, roots grew from them, and that thus they often became fixed in the jaw through life. A more strict enquiry into this subject, in

the general progress of science, has proved how erroneous these opinions were: they have, consequently, been discarded.

In a modern medical work of repute, published for the use of families, it is asserted, that* "the first teeth of infants "constantly become carious at the roots, "and are loosened and expelled by *that* "*means* when left to nature alone." It is certain that children's teeth are often affected with caries at the time of shedding, but it is as certain that this is not a means taken by nature for their expulsion. If the contrary opinion were generally adopted, it might be attended with serious consequences; for the commencement of a dangerous disease might then be neglected, or improperly treated, from a supposition that it were only a natural effect. Cariosity is as much a casualty in the teeth of children, as in those of adults.

* Dr. Underwood on the Diseases of Children, vol. i. p. 213

The shedding of the teeth is as wisely and wonderfully effected, as is their formation. According as the second set advance to perfection, the roots of the milk teeth absorb; and as no traces of them can be found, we must suppose that they gradually decompose, and, becoming fluid, are, by an admirable arrangement in the human structure, taken away by proper vessels into the mass of the blood. This wasting begins, sometimes, on the side of the fang, and sometimes on the point, and proceeds upwards to the neck; the tooth, becoming loose in consequence, falls out, or is easily pressed out of the gum, to which it then has only a slight attachment. When the teeth are extracted during the process of absorption, they appear as if the fangs were partly broken, or splintered off, but the fangs never exhibit the least appearance of cariosity, even when their crowns are carious. While the fangs are absorbing, the teeth continue firm

in their situations, so that the child has the proper use of them until their successors are nearly ready to supply their places.

If the process proceed slowly, and the permanent teeth are ready to emerge from the gum before the temporary are shed, which often happens, then the permanent appear on the inside in their own sockets; but when the temporary teeth do not obstruct the permanent, these come forward, and appear in their proper order, taking place of those which are shed.

Though the pressure of the permanent teeth may in some measure induce absorption of the fangs of the temporary, yet it is certainly not a primary or principal cause. The milk teeth are often shed a considerable time before the permanent are ready to succeed them. Mr. Hunter* mentions some cases, in which the milk teeth were shed, where there were no teeth be-

* Natural History of the Teeth, page 99.

neath them: and, on the contrary, it is common for some of the milk teeth to retain their situations, and their fangs, until those which are to succeed them appear, consequently, in a wrong place; and when such milk teeth are extracted on account of the irregularity they produce in the disposition of the second set, their fangs are frequently quite perfect.

I was lately consulted by a young gentleman of about eighteen years of age, who complained of feeling some uneasiness in one of the lateral incisores of his upper jaw. On examining his teeth, I found that the one he complained of was an incisor of the first set, which had not been shed, the rest of his teeth were perfect, and good, and completely regular in their arrangement, although the above-mentioned tooth was one more than he ought to have had. I extracted it, and found that the process of absorption had but just commenced on the side of the fang, near to the point. In

order to fill up the space occasioned by the loss of this tooth, I gave the teeth on either side a disposition to approach each other, by binding them together with a ligature.

There is no period at which the teeth and gums of children require so much attention as at the time of their shedding. It is of the greatest importance with respect both to their health and future appearance.

OF THE TARTAR OF THE TEETH.

The furfur, or scurf, called tartar, which collects upon the teeth, is a deposite from the natural juices of the mouth; for calcareous concretions of the same description are sometimes found in the orifices of the salival glands. This deposite thickens, and becomes hard on those parts which are not exposed to friction, such as between the teeth, and at the base of their crowns, close to the gums. The grinding surface of the molares are often entirely covered with it, when from the loss of the molares which should oppose them, or from some other cause, they are not used in mastication, the tartar consequently remains on every part of them, there being no friction to rub it off as it collects.

The tartar thus deposited is of a yellow or blackish colour, and gives to the teeth a very

disgusting appearance. When it is allowed to remain and accumulate, it produces looseness of the teeth and fœtid breath; it also causes a recession of the gums, and dissolves the union between the teeth and their sockets; the teeth being thus deprived of their attachment fall out. The front teeth of the under jaw are more frequently lost by the effect of tartar, than by caries, or any other cause.

This species of foulness of the teeth, according to the testimony of Leuwenhoeck, is the habitation of numerous animalculi; his communications on this subject are very curious, and are published in the Philosophical Transactions.*

The teeth of some persons are prone to collect tartar in great quantities: this arises from some peculiarity in the constitution. The most remarkable case of this kind I have witnessed, was that of a young woman

* Vol. 16, No. 159, page 568.
Vol. 17, No. 197, page 646.

who had been for some time in a languishing state of health: as her teeth exhibited a very unusual appearance, she was advised by a medical gentleman to shew them to me. I found the teeth of her under jaw so entirely covered with tartar, as to appear like one mass of carious bone. The molares of the right side of her upper jaw were also completely covered with it, and it had so accumulated on these teeth, that it pressed out her cheek, and gave it the appearance of being tumified on the outside. The gums were soft and ulcerated, she had a great flow of frothy saliva, and an uncommonly foul breath. The accumulation of tartar was so great as to render it unsafe to remove it all at once. I therefore removed it at intervals, and also took out two of her teeth, which were carious and loose. I bled the gums freely, and gave her a balsamic astringent lotion for her mouth.

Had this young woman no other cause of illness than the foulness of her teeth, it

was alone sufficient to reduce her to an ill state of health.

The teeth of the Negroes, in some of the West India Islands, are usually encrusted with tartar. The fatal diseases which often follow the bite of these Negroes, are attributed, by Dr. Armstrong, of St. Vincent's*, to the noxious qualities contained in the tartar of their teeth.

An accumulation of tartar upon the teeth may be prevented by that daily attention which delicacy prescribes. It is deposited in a soft state, and is thefore removed with little trouble when recently collected, but when once suffered to harden, recourse must be had to the dentist. When a cure of the pernicious effects of tartar is attempted, the treatment must vary according to the state of the teeth and gums, and the degree of injury they have sustained by neglect.

* Observations on the Use of the Muriate of Barytes in Scrophulous Affections of the West Indies.

OF CARIES, OR DECAY OF THE TEETH.

Caries most commonly commences in the bony portion of the body of a tooth; the enamel, immediately covering the tainted spot, soon loses its transparency and colour, and thus the disease becomes visible. It often makes considerable progress in the destruction of the bone before its morbid influence decomposes the enamel; but as the wasting of the bone deprives the enamel of support, a slight pressure in mastication will cause it to break, and a hole is by this means formed in the tooth. The decay of a tooth does not always begin in the bony part; it sometimes makes its first appearance on the enamel in form of a brown or blackish speck, the centre of which becomes a hole, and the disease quickly communicates with the body of the tooth; this is the case when caries is com-

municated by contact. As caries is liable to commence on every part of a tooth, except the fangs, it sometimes begins in parts of the teeth which are difficult to get at in order to apply any thing to arrest its progress; such as on the sides of the necks, or on the sides of the bodies of such teeth as are in close contact with a neighbouring tooth. The molares are much more subject to decay than any of the other teeth. The disease frequently appears first in the furrowed depressions of their grinding surface, which become discoloured, and shortly after breaking, a hollow is discovered in the bone of the tooth. The progress of the disease is frequently stopped, and the tooth saved by clearing away as much as possible of the carious part, and stopping the hollow closely with prepared gold, which excludes the air, and prevents foulness, or the pain and irritation occasioned by food lodging in it. The incisores are often destroyed by caries; it generally commences on their sides, and

this happens most frequently when they are irregular, or pressed very closely together for want of room. In numberless instances these teeth, which are of so much consequence to the appearance of the countenance, are saved by filing the tainted parts entirely away; but this should be done before the decay has penetrated so far as to render it impossible or improper to take it all away. It too frequently happens that those whose teeth are diseased, do not apply for advice until it is too late to do any thing to save them effectually. They neglect what they consider a matter of small importance, till it forces itself on their consideration by becoming a visible blemish, or by inflicting the insupportable pain of the tooth-ache; and then extraction is in general the only remedy.

In modern polite seminaries the children's teeth are frequently examined, and kept in order by a dentist. This is a regulation which prevents much future pain

and regret, and one for which children, when grown up, are far more grateful, than for the acquirement of some of the lighter accomplishments; nor can the recollection of indulgence, or a regard to amusement and dress, in any measure compensate for neglecting the preservation and regularity of the teeth.

The dentist makes use of a magnifying mirror in his examination of the teeth, by means of which he can discover a caries before it becomes visible to others, or known to the patient, and in this early stage it is often perfectly cured.

That kind of decay of the teeth, called by Mr. Hunter the denuding decay, commences on the enamel, which loses its power of adhesion, and wastes from off the anterior prominent parts of the teeth, producing an appearance as if it had been taken away with a smooth file. The teeth are more frequently denuded of their enamel by the

use of pernicious tooth-powders and tinctures than by disease.

No medicine has yet been discovered which will prevent caries of the teeth, or which will effectually operate as a cure; nor is the cause from which it originates positively ascertained. The most probable conjecture of the origin of caries is, that the cause is imbibed at the time of the formation of the teeth, from constitutional disease, or from an irregular, morbid, or obstructed action of their formative vessels, by which they were prevented from attaining the degree of perfection, necessary to give them length of existance. This opinion is strengthened by observing that those teeth which form at the same period, are frequently diseased together, their organization being from the same cause in a similar degree of imperfection; hence they are so often seen affected in pairs. Sometimes caries affects only the incisores, and it is often entirely confined

to the molares, when the corresponding grinders at each side, in the upper or under jaw, are diseased at the same time. Artificial teeth, composed of animal substance, or natural teeth, which are artificially placed to supply accidental deficiencies, having no vital principle to resist the effects of the heat, and moisture of the mouth, are affected with caries, similar in appearance to that which affects the living teeth; it first attacks and destroys the bone, and afterwards the enamel. From this observation it appears, that a portion of a living tooth may, from some original, internal defect, prematurely lose its power of life, or of self preservation, and become carious. The progress of caries is the cause of inflammation, and its consequences to the living parts with which it is connected.

It is commonly supposed that one bad tooth will affect a whole set; but experience proves this to be a mistaken supposition. One diseased tooth very often affects all the

teeth with a sense of pain; but if they be kept clean, caries is infectious only in cases where the tainted side of a tooth lies in close contact with another, and even then it does not invariably follow that it is communicated.

If caries were the effect of an external cause, or produced by the use of certain kinds of food, the teeth would all be liable to be affected by this disease at the same time; but this is not the case, sometimes only one, two, or three teeth are thus affected, whilst the others remain sound, and the front teeth of the under jaw, though exposed equally with the other teeth, are seldom destroyed by caries. It also appears that the teeth of individuals, of the same family, frequently resemble each other in their inclination to be sound, or diseased, as well as in their form and size.

Kalm, as quoted by Herder, in his remarks on climate, observes, that the "Off-"spring of European colonists, in Ame-

" rica, lose their teeth soon, and prema-
" turely, while the Americans retain their
" teeth white and sound to the end of their
" lives."

Mankind, in civilized society, is subject to a great variety of diseases unknown to men in a state of nature. The latter are compensated by health, vigour, great animal perfection, and liberty, for the privation of the mental enjoyments, which, in civilization, arise from the study of philosophy and the sciences.

OF IRREGULARITIES OF THE TEETH.

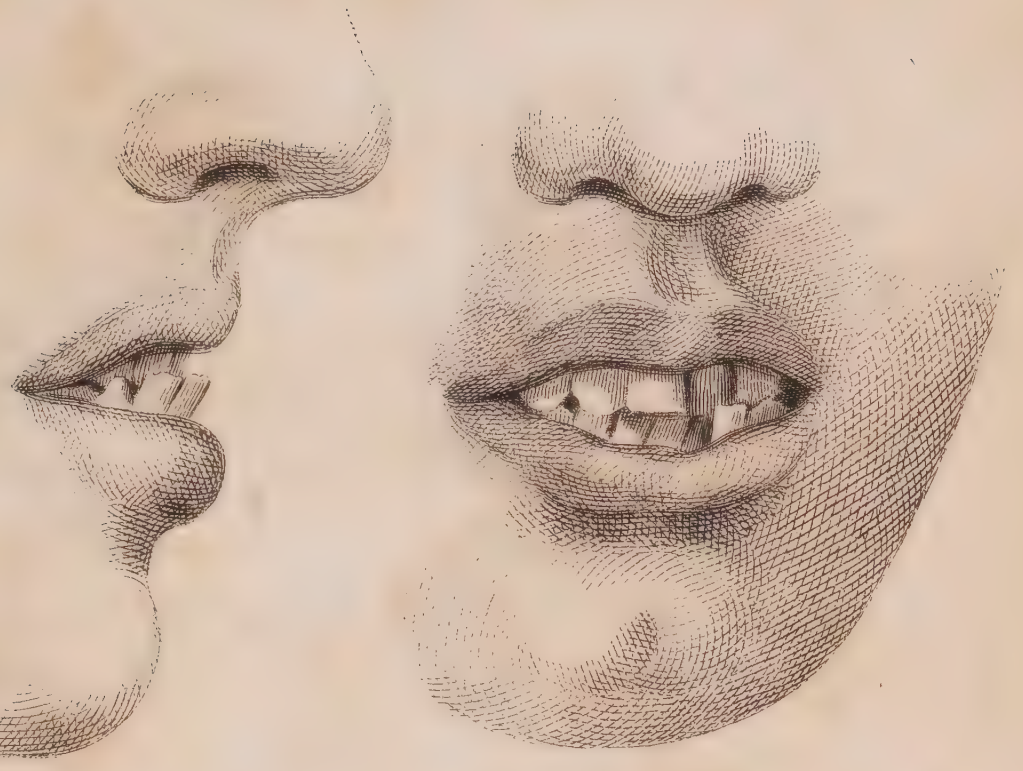
The influence of the teeth, in giving form and expression to the human face, is much more considerable than is generally supposed.

The symmetry and beauty of the oval of the countenance depend entirely upon the form of the mouth and chin; the form of the latter is determined by the shape of the jaw bones, and the regularity of the teeth; both of which may be greatly influenced by mechanical pressure.

The annexed Plate represents a few cases drawn from nature, which were regulated and reduced to symmetry.

The most remarkable effects produced on the countenance, by irregular positions of the teeth, are the projecting chin, and the prominency of the two front teeth of the

Plate 2nd



J. Mills Sculp.

upper jaw, commonly called the rabbit mouth. There are many other deformities occasioned by irregularities of the teeth, but of less importance than these. They are generally caused by the first teeth not being shed in time to make room for the second; the latter consequently take irregular positions; and when suffered to remain in this order, until the teeth of the upper, and those of the under jaw have come into irregular contact with each other, the deformity becomes established.

The projecting chin is frequently a consequence of the casual irregularity of the protrusion of the front teeth. When those of the under jaw project, or when those of the upper have not come sufficiently forward, the points of both come in contact, in a direction contrary to what they should do; that is, the incisores of the upper jaw, close inside those of the under, instead of projecting a little beyond them. As the teeth lengthen, the deformity is confirmed, and becomes conspicuous.

It may be easily conceived how such a circumstance must disfigure a countenance, which, without this deformity, would be beautiful.

To remedy the projecting chin, it is in most cases necessary to extract one of the incisores of the under jaw, in order to allow the rest to be pressed inwards. This is effected by fixing, on the front teeth of the under jaw, a gold or silver case,* formed of two sides, the outer side of which is rounded off obliqely to the upper edge, so as to pass a little behind the teeth of the upper jaw, when the mouth is shut.

The wearer of this case should keep the jaws firmly closed as constantly as possible, which will have a tendency to press those teeth forwards that rest their posterior sides on the slanting side of the case.

This instrument must be worn until the incisores of the upper jaw are brought suf

* This has been very accurately described by Mr. Hunter.

ficiently forward to admit the outer edges of the lower teeth to be got behind them; by keeping the teeth pressed close in this direction, those of the under jaw are pushed inwards, and those of the upper jaw forwards, till the molares of both jaws touch, after which the face gradually assumes its natural form.

When the second teeth are large, and the jaw bones have not grown sufficiently to admit of their regular arrangement, the teeth crowd and lap over each other. From the same cause, also, the front incisores of the upper jaw are frequently pressed forward, and become very prominent, which forms the rabbit-mouth.

Where there is not space in the jaws for the regular arrangement of the permanent teeth, some of their number become superfluous; and it is often found expedient to extract one or two from each jaw to give room to the rest. It is necessary to keep up a continued mechanical pressure upon those teeth

which have been suffered to grow irregularly, until they are gradually forced into their proper places. A variety of ingenious contrivances are devised for the purpose of pressing upon irregular teeth, to reduce them into proper order; the gold or silver case, already described as a means of remedying the projecting chin, is one of the most useful instruments, as it is equally applicable to one or more teeth, when proportionably constructed. One or two teeth of the upper jaw may be brought forward by a small instrument of this kind, secured upon the tooth, or teeth, of the under jaw, in less than half the time, and with much less trouble to the patient and operator, than by means of the flat bar bent to answer the curve of the teeth, which is generally used for that purpose.

To apply pressure upon teeth which are too prominent, I make use of a bow, or spring of gold wire*; the flat hooks are fixed

* See Plate the second.

upon the incisores, and the ends of the spring drawn down and tied to the molares at each side, the tendency which the ends of the spring have to rise keeps up a constant pressure from its centre on the front teeth. Springs on the same principle, varied in their construction, as circumstances require, may be applied with success to a great variety of cases; for instance, if it were necessary to apply pressure to the cuspidati, the spring, being flattened a little at each end, should be made of a proper length, and curved, so as to rest on those teeth, but not touch the incisores, and the centre of the spring bound to the incisores; such a disposition not only acts upon the cuspidati to press them inwards, but may also be made, if necessary, to bring forward the incisores. A wire-spring, of this description, will be found to act with a greater degree of certainty than the flat bar, because its action is constant; it is also kept on more securely, and is infinitely less troublesome to the

patient. I have given a delineation and description of it, as it has not, to my knowledge, been made use of by any in the profession but myself.

It is necessary to add, that the success of these contrivances principally depends on the neatness and ingenuity with which they are constructed, and the skill with which they are applied.

A very simple mode of influencing the form of the jaw bones, and the position of children's teeth, is by means of a small lever formed of a piece of wood about the thickness of a common flat rule, an inch in breadth, and five or six inches in length. If one end of this be placed on the inside of the incisores of the upper jaw, close to the gum, and the other end held in the child's hand, and pressed inwards towards the neck, the lever will in this position rest upon the chin, which it will press back, and at the same time bring the teeth of the upper jaw forward. In many instances I have known a

repetition of this, continued for a few hours in the day, to alter and amend the position of the teeth, and the form of the countenance, by pressing back the chin, and altering its shape, from the pointed, projecting, to the moderately receding form, and by giving additional breadth to the face, at the angles of the jaw.

The appearance of one or two teeth more than the regular number is another cause of irregularity. These teeth, called supernumerary, are of a deformed shape, nearly resembling that of the cuspidatus; they most commonly appear on the inside of the front, or side of the upper jaw, and are easily known by those who are conversant with the physiology of the teeth. They should be extracted as soon as they are sufficiently grown.

It is now pretty generally known that children's teeth may be regulated in their growth, so as to prevent any irregularity arising from that cause; but it is of the

greatest importance that the regulating children's teeth be entrusted to proper and skilful hands; incurable deformities, and loss of the teeth, are too often the consequences of improper treatment. I know a young Lady, who, in her childhood, was deprived of her lateral incisores of the upper jaw; and I have at present two children under my care, one of whom, a girl, is deprived of a front incisor of the upper jaw; and the other, a boy, wants a lateral incisor. The loss of the teeth in these three cases was occasioned by the ignorance of an operator, who, in *regulating* the teeth, had taken away the permanent instead of the temporary. The latter soon after naturally shed, and occasioned the deficiency.

Deformities, arising from irregular positions of the teeth, are in general easily prevented, but the cure of them is often difficult and tedious. A primary means of prevention is, by a timely removal of the milk-teeth; the utility of removing them depends

on its being done at a proper period. Their premature extraction often produces an effect quite contrary to that intended, as, in such cases, the gums and alveolar processes shrink back to the permanent teeth, which have not come forward; so that the space, instead of being enlarged, becomes contracted.

The second teeth often appear irregular, in cases where the greatest attention and the most skilful treatment have been adopted; they may, however, be reduced to order, whatever may have been the cause of their having taken irregular positions.

OF LOOSENESS OF THE TEETH.

The loosening, and casting out of the teeth in old age, is a common effect of Nature; but the period of life at which they are thus naturally lost, is various and uncertain. The teeth of some persons become loose prematurely, whilst those of others exhibit no disposition to loosen even in extreme old age. This difference depends in a great measure on the care bestowed upon the teeth from childhood, but still more upon constitution.

The teeth are frequently loosened by violence, or by disease of the gums and alveolar processes.

When teeth are loosened by violence, they should be again fixed firmly in their places by binding them with a ligature to the neighbouring teeth. The gums should afterwards be frequently washed

with an astringent lotion, until the fangs and necks of the teeth shall have re-united with the periosteum and gum. When this re-union is effected, the ligature may be taken off.

Teeth suddenly beaten out, may again be returned to their places and rendered as fast and as useful as before, provided they be replaced within a few hours after the accident. In replacing a tooth of this kind, great care must be taken to place it into the socket perfectly clean; it should then be rendered firm in its position by tying it to the adjoining teeth. The gums should be frequently washed as before observed, with an astringent lotion. The ligature may be removed in a few days.

Looseness of the teeth proceeding from foulness, or disease, must be treated according to the state they exhibit.

The irritation, and soreness which looseness of the teeth occasion, render mastication painful and imperfect; the food is con-

sequently taken into the stomach unprepared for its digestive powers ; from whence arise pains of the intestines, indigestion, and a general derangement of the system.

When the gums become soft, and detached from the necks of the teeth, they should be bled freely. The best method of doing this is to puncture them with a lancet: it induces a new and firm growth of the gums which attaches to the teeth. It is often necessary to repeat the puncturing three or four times, after which the daily use of an astringent wash, or powder and a brush, will stimulate the vessels, and keep them in healthy action.

An established looseness of the teeth on which bleeding, astringents, or stimuli will have no good effect, may be remedied by binding them one to the other with a very fine gold wire. Ligature of silk, or India weed, though very useful to the Dentist for many purposes, is not so good for this, for being liable to collect foulness, and to perish

soon, it requires to be often renewed, which must be attended with much trouble to the patient. A properly prepared and well applied ligature of gold wire is a more secure binding, and not subject to the above inconveniencies. Teeth secured by this mode often continue firm in their places, and may be brushed without the risk of being disturbed.

Cleanliness of the teeth, and friction of the gums, are the greatest preservatives of the health, and appearance of both.

OF DISEASES OF THE GUMS.

The gums, uninfluenced by the state of the teeth, are rarely affected by disease: the disorders to which they are liable commence in infancy, when the teeth are about to pass through them, and terminate in old age with the loss of the teeth.

Besides the inflammation of the gums of infants at the time of teething, which has already been treated of, the gums are also liable at this time to be slightly ulcerated, but seldom so much so as to occasion pain, or to endanger the health of the child. When the ulceration is unaccompanied by inflammation from the pressure of the teeth beneath, it is in general readily removed by administering a little aperient medicine, and by applying a mixture of finely powdered borax and honey to the gums.

Children, previous to the shedding of their

teeth, are subject to gum boils, and to painful soreness, and inflammation from decayed teeth.

The temporary teeth are subject to become carious; from this cause children are liable to suffer tooth-ach, and all the effects of inflammation which diseased teeth produce in adults. The gums and sockets partake of the diseases of the teeth, abcess forms at their roots, and the gums become sore, and ulcerated.

By these diseases the process of shedding the teeth is impeded, and when the crowns are wasted away by caries, part of the fangs often remains in the gums, by which the latter are kept in a constant state of ulceration and soreness.

The effects produced by this diseased state of the gums, have not unfrequently penetrated so deep as to injure the jaw bone, and destroy some of the growing permanent teeth, by which the child is disfigured for life.

The prevention of such serious consequences is obviously effected by taking away those teeth, or stumps, which produce abcess, or ulcerate the gums. They are in general very easily removed: for those teeth, or stumps, which produce the worst of these effects, are partly decayed, and partly absorbed, so that the child feels little or no pain in the removal of them, except that of apprehension.

The gums of adults are at all times subject to be diseased. The most common disease to which they are incident is that which is erroneously termed scurvy; but which is in fact a local disease arising from uncleanliness of the teeth, and a turgidity of the gums, occasioned by a fullness of their vessels.

When the gums are diseased from this cause, they are swollen and soft, of a darkish florid colour, and apt to bleed with very little pressure.

This state of the gums is remedied by

bleeding them, and by removing all extraneous matter from the teeth. After this is done, the habitual application of a brush, and a little powder, will maintain a healthy action in the vessels, and keep the teeth clean. This will prevent the recurrence of a disease which not only destroys the teeth, but taints the breath, and gives a most disgusting appearance to the mouth.

The gums of those who are constitutionally affected with scurvy, often suffer greatly from that disease. The sea scurvy, in particular, affects the gums to a dreadful degree. In these cases local applications are not of the least service: the malady must be remedied in the system.

There is nothing so highly injurious to the health and consistence of the gums, as the medicinal use of mercury. In many instances its effects have detroyed, together

with the gums, the teeth, sockets, and jaw bones; but the present improved method of administering this powerful medicine, renders such dreadful effects now very rare.

OF THE EPULIS, OR GUM BOIL.

The abcess known by the name of a gum boil, arises from a diseased tooth. When the effects of the disease have extended to the vessels at the point of the fang, and to the periosteum and socket, the circulation being impeded in those parts induces inflammation, suppuration takes place, and a gathering of matter is formed within the socket of the tooth: until this matter has found a way of escaping, it causes a very considerable degree of pain. The whole face is often swoln and painfully inflamed, and the pain does not subside, until the purulent matter which had collected within, be discharged. It soon erodes the socket, on the outer side, opposite to where it had formed, and bursts through the gum. It sometimes breaks on the in-

side of the mouth, but this does not often happen.

The pain and swelling attendant on a gum boil subside immediately after the pus has been discharged; but this discharge, though salutary, does not effect a radical cure: the orifice through which its morbid contents were ejected does not entirely heal, and while the diseased tooth which occasioned the gum boil is suffered to remain, there will be a constant oozing of matter: pain and inflammation will be also liable to recur in consequence of cold. It is therefore advisable in most cases of this kind to extract the diseased tooth; the effect will cease with the removal of the original cause.

The destruction of a part of the jaw bone, and the consequent loss of several teeth, have often resulted from allowing a tooth, which had diseased the socket and gum, to remain in the jaw; the morbid matter generated in the socket becoming acrid, and

penetrating into the cancelated parts of the jaw bone, produces caries, which sometimes extends the length of three or four teeth. In these cases the carious part of the bone must separate from the sound by exfoliation before a cure can be effected. The process of exfoliation being tedious, the patient is necessarily exposed to suffer a long time. All these bad consequences may be obviated by a timely removal of the affected tooth.

A gum boil is sometimes deeply situated in the jaw, and extends along three or four teeth. In every case of this kind, great care should be taken to prevent the abcess from breaking on the outside of the face, which has frequently happened when the gathering has lain deeper in the jaw, than where the cheek attaches to the gum on the inside of the mouth. If it be suffered to break outwardly, it leaves a disfiguring mark resembling the effects of scrofula:

this, however, may be always prevented by opening it on the inside in proper time.

Gum boils in the mouths of children, occasioned by caries of the temporary teeth, have in many instances diseased the jaw bone, and destroyed the permanent teeth which were forming within. Care and attention alone are necessary to prevent consequences of such a serious nature, as they never occur but when the disease is long neglected.

Abcesses frequently form in front of the upper jaw, in the sockets of the incisores. They do not appear to be either so diffuse, or so virulent in this situation, as when they are seated at the roots of the large teeth.

They often follow the operation of ingrafting teeth upon the old fangs of the incisores of the upper jaw by means of a pivot. In these, as in other cases of gum-

boils, they are productive of swelling and pain; both of which subside after a discharge from the abcess. In order to prevent these consequences of the ingrafting of teeth, care should be taken not to make the pivot so long as to press against the bottom of the hole into which it is inserted. I have found that this precaution, and bleeding the gums in the direction with of fangs upon which the new teeth have been fixed, immediately after the operation, has, in most instances, prevented gum-boils from forming in consequence of it.

The symptoms indicative of a gum-boil are, a swelling and softness of the gums, accompanied by an acute throbbing pain; when these sensations are perceived, the disposition to suppurate should be excited by warm fomentations, taken into the mouth, or by the application of a roasted fig to the affected part of the gums. This will have a tendency to allay the pain, and

to soften the tumour. It should then be opened with a lancet, which will cause the pain and swelling to subside in a short time.

To prevent the recurrence of gum boils, it is generally found necessary to extract the diseased teeth which had caused them.

OF THE DISEASES OF THE ANTRUM MAXILLARE, OR MAXILLARY SINUS;

CALLED ALSO THE

ANTRUM OF HIGHMORE.

The maxillary sinuses have sometimes been the seat of the most dreadful and fatal disorders. Mr. Heaviside has a skull in his collection, and the death of the person to whom it belonged was occasioned by a gathering of ossific matter in the antrum. The ossific matter accumulated till it became of an amazing size; and, in the progress of its growth, pressed out the eye and teeth of the miserable patient.

The antrum is subject to abcess arising from inflammation of the membrane with which it is lined. This distemper is generally communicated from a diseased tooth; it is often induced by violence, and

sometimes exists independently of either of these causes. The disease is preceded by a throbbing pain, which appears to be seated at the roots of the molares of the upper jaw. In its more advanced state, it painfully affects the eye, nose, and ear; morbid matter is generated in the cavity, which, having no passage out, accumulates and destroys the neighbouring bones by its pressure.

In some cases, however, collected matter remains in the antrum a considerable length of time without injuring the bone.

The cure of this, like other abcesses, can only be effected by giving a free discharge to the matter, which should be done as soon as the symptoms give certain evidence of its having collected. The best way of making the opening, is, by extracting the middle grinder, which is situated directly under the cavity, and then piercing through the socket to the antrum. The hole, thus pierced, should be kept open for some time after the

contents of the abcess have been discharged, and washed with balsamic, detergent, and mildly astringent liquids, thrown in by means of a syringe, as long as appearances indicate any symptoms of disease.

All these painful effects proceeding from inflammation have been occasioned by worms in the maxillary sinuses. The presence of worms in these cavities is accounted for, by supposing the ova of an insect to have been deposited in the nostril, or to have been drawn with the breath into the nose, and passing into the antrum by the duct leading from thence to the nose.

These loathsome and painful guests are expelled by piercing the antrum, as in cases of abcess; and, in order to exterminate them entirely, the parts should be injected with oil or fluids prepared for their destruction.

OF THE DISEASES OF THE ALVEOLAR PROCESSES.

Although the alveoli and teeth be often mutually diseased, as in cases of epulis, or when they suffer from the effects of mercury, the alveolar processes are, however, subject to some diseases peculiar to themselves, and in which the teeth do not participate.

The most common disease with which these processes are liable to be affected, is an absorption or shrinking away from the teeth, which happens mostly to the incisores of the under jaw, in consequence of tartar being allowed to accumulate upon them. From this cause it is not uncommon to see the alveolar processes and gum wasted from these teeth nearly down to the point of the fangs, and their places usurped by

tartar, by which such teeth are eventually lost.

The internal bony parts of the sockets are liable to swell at the bottom, and sometimes the transverse process at the side of the fangs thickens; in either of these cases the teeth of the sockets so affected are pressed out of their places. This swelling, or thickening in the alveoli, is often accompanied by an ulceration of the membrane, and a secretion and discharge of matter, which oozes out of the sockets, in the direction of the teeth.

This disease, and its unpleasant consequences, may be considerably alleviated by bleeding, and the use of astringent tinctures, and by constantly keeping the teeth clean, and the gums well brushed.

A very remarkable and distressing case of disease, originating in the alveolar process, is that of a youth of the name of Shutliff, now living near Leeds. A hard, cartilaginous tumour appearing in front of

the under jaw, he was admitted into the Leeds infirmary, where every means were in vain resorted to for its extirpation. The tumour has been increasing in size for nearly seven years, and I imagine that the growth of it will cease only with the life of the patient: it grew upwards from the alveoli of the incisores, and is now of such magnitude that it has stretched the jaws open to a frightful extent.

On examining the teeth of a young lady about a year ago, I perceived a hard tumour situated behind the incisores of the under jaw; on opening it I found it contained a yellow matter of the consistence of tallow. I cut the tumour entirely away; the part soon became covered with sound flesh, and the tumour has never since shewn any disposition to return.

The first symptom which precedes the loss of the teeth in old age, is a receding, or shrinking of the sockets and gums, the teeth gradually lose their support, and vi-

tality, turn out of their positions, and are thus finally ejected.

As it is the growth of the alveolar processes which lengthens the infant countenance, and gives to it the character of youth; so it is the loss of these processes, which inevitably follows the loss of the teeth, that gives to the human face the characteristic marks of old age. The under jaw must necessarily be raised higher to bring it into contact with the upper; the chin consequently approaches nearer to the nose, the lips turn in, and the integuments fall into wrinkles.

OF THE TOOTH ACH.

THERE is no pain to which the human body is liable, more generally felt, or perhaps more acute, than the tooth ach. This pain is most commonly occasioned by a carious tooth: though the pain arising from every disease incident to the teeth, sockets, and gums, is generally denominated tooth ach. If it proceed from a carious tooth, a cure may be effected by excluding the air from the hollow part, which is done by filling it in the manner described in the chapter on caries. In order that this may have the wished-for effect, it should be done before the decay has proceeded too far. When a tooth is so far decayed as to become useless; when it is a frequent source of pain, and an impediment to mastication, it ought to be extracted. Those who object to the extraction of a tooth which is so

much decayed, as not to allow of being filled with metal (gold or tin), may find benefit from keeping it closely filled with gum mastich, which, when softened in hot water, is easily pressed into the hollow. It is necessary to renew the mastich every three or four days, to prevent it from acquiring an unpleasant flavour.

Tooth ach arising from inflammation of the periosteum, socket, and gums, is generally induced by a carious tooth, or by dead stumps. When the latter have lost their vital principle, and their connexion with the system, they irritate and inflame the gum and socket in which they are situated. The pain in these cases often follows the course of the nerves, and violently affects the head and ear. A perfect cure of this kind of tooth ach is effected by a removal of the tooth, or stumps which caused the inflammation; in many cases it is better not to attempt this till the inflammation has subsided.

Pains of the teeth, gums, and neighbouring parts, are frequently symptoms of pregnancy, and if there be a disposition to caries in any of the teeth, its progress is accelerated at this time. When the teeth are perfectly sound, they are often affected with pain, accompanied by swelling of the gums, during the period of gestation. In these cases tooth ach is generally occasioned by a fullness of the vascular system, and may be relieved by bleeding and aperient medicine.

Inflammation and swelling of the gums, with pains of the teeth and jaws, are frequently the effects of cold. In cases of this kind the use of warm fomentations, and keeping the head and face warm with flannel, are the best modes of cure.

The discovery of a certain cure for tooth ach, by topical application, is an object which has been much desired and sought after, but without success; the best which have been discovered hitherto are found to

give only temporary relief. As tooth-ach is generally intermittent, whatever is applied with a view to give ease, previous to a cessation of pain, obtains the merit of procuring relief, and thus have various remedies got into undeserved repute.

Although there be no medicine, or local application, which will effectually cure the tooth-ach, there are several which have an effect to destroy the nervous sensation for a time; but as long as the cause of pain remains, the effect will return at intervals, and is generally the first symptom of cold.

Essential oils are often found efficacious in alleviating tooth-ach pain; the best are the oils of cloves and cajeput. A mixture of æther and laudanum, or of laudanum and any ardent spirit, often procures relief. A bit of cotton, saturated with any of these, and placed in a hollow tooth, will, in most cases, cause a cessation or alleviation of pain. Relief has also been obtained from the gall-nut.

As fluid cannot well apply to aching teeth of the upper jaw; the best form of application is that of a pill, which should be pressed closely into the diseased tooth. The most efficacious drugs for such pills are opium, a combination of camphor and opium, or the hydrargyrus cum sulphure, and opium.

Doctor Handel, of Metz, gives the following remedy for the tooth-ach, which has obtained great repute on the Continent:—

" R. olei hyosciam, dr. j. Opii thebaici " drach. dimid. extract belladon. cam- " phoræ ana gran. vj. Olei cajaput, tinc- " turæ cantharidum ana gutt viij. Re- " digantur in forman opiat.

Sometimes one of these remedies will succeed where another has failed. Where they procure relief, the tooth which caused the pain should be examined, and if it be in a state to admit of it, it should be filled with metal; the tooth may, by this means, be preserved, and continue of use for several years.

Many people, who dreaded the pain attendant on the extraction of a tooth, have submitted to be put to far greature torture, by suffering their ears to be burned, or by allowing a hot wire to be introduced into the aching tooth; and finding these operations fail of giving relief, have been at last forced, by a continuance of pain, to have the tooth extracted.

Powerful remedies for the tooth-ach, as well as for other diseases, are ever dangerous in the hands of the ignorant. A case occurred a few years ago of a gentleman in London who died raving mad, in consequence of the application of caustic, by a celebrated quack who professed to cure the tooth-ach, radically, without extraction. This case is published in *The Medical Journal.**

* Vol. III. Page 55.

OF CLEANING THE TEETH.

KEEPING the teeth clean, independently of being necessary to personal appearance, is their greatest preservative. The early, habitual application of a brush to the teeth and gums keeps the former free from foulness, and to the latter it gives a stimulus, which keeps their vessels in healthy action, and thereby preserves their firmness and elasticity.

As soon as the first teeth of a child are completed, the teeth and gums should be brushed twice, or once at least, every day with a soft brush and water. The brush should be used in a direction with the teeth, in order that it may the better apply between them, and to the gums. When children are thus early familiarized with the healthy and necessary custom of brushing

the teeth, it becomes a fixed habit, and they ever after find it absolutely essential to their comfort.

Soft brushes, although recommended for children's first teeth, are not so proper for the teeth and gums of adults. Brushes may, however, be too hard, and are in that case equally improper. Those whose gums are sore and tender, through neglect, should use a brush rather soft at first; but when, by means of its habitual application, the gums have become sound, a tolerably hard brush should be used.

In winter, or in cold weather, the water used in brushing the teeth, should be tepid.

It is quite unnecessary to use any kind of powder to the first teeth of children; when tartar appears to collect on their permanent teeth, or on the teeth of adults, it will require the action of a brush and powder to dissipate it; if it be suffered to collect and harden, there is no way of removing it properly and with safety but by instru-

ments used for that purpose by the surgeon dentist. This operation is commonly called scaling, because the tartar comes off in flakes, or scales. There are persons who entertain an unfounded prejudice against this most useful and necessary operation, from an erroneous opinion that part of the enamel must be taken away with the tartar and foulness with which the teeth are enveloped: a circumstance which cannot possibly happen unless the instruments be very ignorantly and unskilfully applied.

Operations on the teeth are certainly not performed equally well, and with equal skill and delicacy by all those who practise them; there are perhaps as many degrees of inequality of merit in the profession of a dentist, as there are in any profession whatever.

Tinctures or powders which have a tendency to dissolve tartarous incrustations, are powerfully destructive to the teeth, such mixtures having a quantity of vitriolic

acid, or cream of tartar in their compositions, dissolve, not only the tartar, but the enamel of the teeth, and though they may, when first used, give them an artificial whiteness, they never fail to effect their destruction.

Charcoal has been much used lately as a tooth powder, and is a good dentifrice if it be unadulterated and finely pulverised. When pure, and reduced to an impalpable powder, it possesses a quality that many dental specifics, bearing costly and high-sounding titles from all quarters of the globe have not, that is, a quality of not injuring the teeth. Charcoal prepared from any soft wood is equally as efficacious as the burnt areca: the superior and exclusive qualities ascribed to the latter as a dentifrice, have no foundation in truth.

A safe and pleasant dentifrice powder may be formed of a mixture of bark, bole armenic, and cinnamon. A decoction of bark, catechu, and cassia, with the addi-

tion of a little brandy, forms a good tincture for the teeth and gums.

No injury can arise from the use of powders, or tinctures, which bear the name of a respectable dentist: for it is but reasonable to suppose that those who are acquainted with the nature and diseases of the teeth, should know best how to prescribe for them.

The best prepared powder, if improperly used, will injure the teeth, and will not answer the purpose of keeping them clean. The brush, with the powder, should be used, as before observed, in the direction of the teeth, up and down; in this way the brush is well applied to the gums, which is of the greatest utility. The points of the brush are also by this means insinuated between the teeth, and apply to those parts where foulness is prone to settle.

Tooth-picks are used to remove small particles of food which sometimes stick between the teeth. Nothing can be better

for this purpose than tooth-picks made of a cut quill.

For the sake of removing some prejudices which a popular author is likely to establish, to the injury of those who may adopt his opinions, I shall make some remarks on the following passages from Dr. Willich's "Lectures on Regimen."

"Tartar must not be broken suddenly, "with iron or glass instruments, but may "be gradually scraped away with a broad "cut quill, or some similar substance. An "expedient equally safe and effectual for "removing the tartar, is to cover the "teeth with a fine powder of gum traga-"canth, or with soft wax, and by that "means to extract the tartar at once with "this adhesive covering. In cleaning the "teeth we ought not to make use of brushes "or sponges, but of the finger, which being "provided with the finest papillary vessels, "is a much better, and a more proper in-"strument, and precludes the necessity of

" resorting to artificial means ; besides, the
" finger has the advantage of being soft
" and pliable, and of feeling any immode-
" rate pressure too sensibly to permit us to
" do injury to the teeth and gums. Hence
" it is an injurious delicacy alone which
" prevents us from making use of it, in
" preference to even the best brushes."

These observations are plausible, but erroneous, and could not have been founded on experience, as a very little would have sufficed to prove their inefficacy, if reduced to practice.

A cut quill, gum tragacanth, and soft wax, are all equally useless for the purpose of removing tartar.

If the finger be preferable to a brush for cleaning the teeth, on account of is *papillary vessels*, and of its *soft pliancy*, the tongue must be still better suited to the purpose, as its papillary vessels are more numerous, and endued with greater sensibility ; and it undoubtedly possesses the qualities of soft-

ness and pliancy in a more eminent degree; yet we do not find that even the continual action of this *soft*, *pliable*, *papillary*, instrument, is sufficient to keep the teeth free from tartar, as it generally collects in the greatest quantities where the action of the tongue is most frequent, that is, on the inner side of the teeth of the under jaw.

The same author also asserts, that, " to " answer every purpose of a tooth-pick, a " thick, soft, cotton cloth should be used " to rub the teeth over gently after every " meal." It is not easy to understand how a cotton cloth can be used as a tooth-pick, although it may certainly be as fit for that purpose as gum tragacanth, or wax, are for the removal of tartar, or as the finger is for cleaning the teeth. Rubbing the teeth over with the finger, or with a cotton cloth, will only serve to establish and harden the tartar in those places where it is almost invariably inclined to collect, namely, in the indentations formed between the teeth, close to the

gums. I shall insert the following passage from Doctor Blake, being firmly persuaded of the importance of the advice it contains.

" I shall terminate this chapter by se-
" riously recommending to parents to have
" their children's teeth, and gums in parti-
" cular, brushed and washed with a soft
" brush and water, at least morning and
" evening, commencing at the period when
" the temporary teeth are complete, that is,
" in general, about the second year. This
" early attention will render the operation
" habitual; and I am fully convinced the
" benefits to be derived from it are almost
" incalculable."

OF TOOTH-DRAWING.

The instruments now used for extracting teeth are admirably well contrived for the purpose; and, when skilfully applied, will, in general, remove a tooth with infinitely less pain than the patient has previously experienced from its aching.

Though tooth-drawing be often practised by mechanics who are totally ignorant of surgery and anatomy, it is an operation which is sometimes attended with difficulty. This difficulty may arise from various causes; for example, when the fang or fangs have firmly adhered to a part of the socket, or when the roots have in their formation assumed hooked shapes, and spread wide asunder. In tooth-drawing the fulcrum should, if possible, be always placed on the outside of the jaw-bone, but from the shape and divergence of the fangs

of the teeth, or owing to the state of the tooth, it is sometimes found necessary to place the fulcrum on the inside.

Single-fanged teeth are extracted with the paces or forceps, which are made for that purpose, and the grinders with the key instrument. This consists of a stem, to one end of which is affixed a transverse handle, and to the other a bolster, with a moveable claw. The force necessary for the extraction of a tooth is applied laterally with this instrument. Various experiments have been made with instruments, ingeniously contrived, to operate perpendicularly; but they have only tended to prove the superiority of the key instrument. There are various improvements upon this latter instrument; that of Whitford, with a moveable fulcrum and claw to grip the tooth on both sides, is an ingenious and useful contrivance.

The great excellence of tooth drawing depends not so much upon the instruments used, as upon the skill with which they are applied.

The use of the key instrument is now very general with those who profess to extract teeth; but a judicious and skilful mode of applying it, is by no means so general. The operation of tooth drawing is often rendered exceedingly painful and perilous, through want of skill in the operator, and from this cause, extensive and dangerous fractures of the jaw bones are not unfrequent.

Empirics have often boasted the possession of certain chemical powders, or fluids, the application of which would instantly dissolve the union between the teeth and the socket, and thereby enable them to lift out the teeth with the fingers. It is scarcely necessary to say that this is impossible, and calculated to impose only on the ignorant and credulous. Decayed teeth are not unfrequently so loose in the sockets that they might be taken out with the fingers, but are more easily and delicately removed by an instrument. There is not, nor has there

ever been, any other mode of extracting teeth, but by force. This force should, however, be delicately and gradually applied.

The extraction of stumps is by no means difficult; they are in general removed with very little pain.

A great part of the pain which attends the drawing of a tooth arises from apprehension, and the preparation for the operation. Those who have faith in the extravagant pretensions of charlatans, do not feel this part of the operation, and submit, with ill-founded confidence, to what may be productive of real and lasting injury; for danger must ever attend surgical operations, when attempted by the ignorant.

ON ARTIFICIAL TEETH.

THERE is nothing by which the human face is more disfigured than by the loss of teeth: it gives to youth the appearance of old age, and entirely alters the original expression of the countenance.

It is, in fact, much doubted whether the loss of an eye, or of the front teeth, is the greatest blemish. An actor, who had lost these teeth, could not well succeed in expressing the sublime or sentimental; for however his action and tone of voice might correspond with the sentiments uttered, his countenance and articulation would be strongly expressive of the ludicrous.

The great deformity and inconvenience occasioned by the loss of teeth, very naturally suggested the idea of contriving a substitute; the art of which, from being long

known and practised, has attained to a high degree of perfection.

Particular modes are daily advertised as being infallible, beautiful, and vieing with nature in excellence; many of which, like panaceas for curing every disease, owe their success, chiefly, to public credulity. The excellence of the art of supplying teeth, does not consist in any particular mode, but, like the fine arts, depends entirely on the skill and judgment of the professor.

The substance most generally used for making artificial teeth, is the tooth of the Hippopotamus, which being of a hard compact body answers the purpose very well, provided the teeth made of it be well formed and properly adapted. One objection to the tooth of the Hippopotamus is, that it does not resemble the human teeth in colour. This difference is more apparent in one or two teeth than in a whole set. The artificial teeth called mineral teeth are composed of baked earth, covered with an

enamel flux, and coloured to imitate nature. Many of them, however, have but little resemblance to nature; their opaque, livid appearance, very much resembling common earthenware.

The mineral teeth were invented by M. De Chemant, who, in addition to the merit of being the inventor, is, as yet, unrivalled in the art of constructing and adapting them. I am, however, of opinion, that the art of making mineral or enamel teeth is still capable of great improvement.

The mineral substance is best suited to the construction of entire sets. A principal consideration with those who wear artificial teeth, is, to have them appear perfectly natural, and no way of attaining this desirable object has yet been discovered, but by placing in human teeth of the same description as those whose places they are intended to supply. Teeth made of any other material are easily discovered to be artificial, especially when placed beside those formed

by nature. No reasonable objection can be made to the wearing of human teeth, in the manner they are now used, any more than to the wearing of human hair in head-dresses. The mode formerly practised of transplanting teeth from one living person to another has very properly been exploded.

The procuring of teeth constitutes an article of traffic; great quantities are imported from the Continent; they vary in price, according to their beauty and excellence; those from Germany are most esteemed.

When a front or side tooth is so far decayed as to be rendered useless, and become a blemish to the countenance, its place cannot possibly be so well supplied as by a human tooth. The decayed tooth is first filed close to the gum, and the crown of a tooth, of which the root has previously been cut off, is fixed to the fang of the old tooth by means of a gold pivot. When this ope-

ration is performed with nicety, it answers the purpose, and has in every respect the appearance of a tooth placed there by the hand of nature. When there is no fang on which to fix a new tooth, it must be attached to the adjoining teeth.

The best mode of placing in teeth, is that practiced by the late Mr. Talma, and by Mr. Lesec. According to this mode, as many teeth as are wanting are strongly riveted on a plate of gold, made hollow, and fitted for the gum to rest in: the plate containing the teeth is attached to the adjoining teeth, by means of elastic gold claws, or springs, placed so as to embrace them. Teeth supplied in this manner may be taken out and replaced by the wearer at pleasure, and may thus be easily kept clean, which contributes greatly to the comfort of the wearer.

This last mode, though more preferable, and generally useful, cannot be indiscriminately applied to every case; as the shape,

situation, or state of the teeth, to which artificial teeth are to be attached, sometimes precludes the possibility of applying claws or springs to them, either with ease or security to the wearer. The judgment of the Dentist should dictate the mode best suited to the case.

Many people entertain an opinion that the wearing of artificial teeth is destructive to the natural teeth to which they are joined, and more particularly so when ligature is used as a fastening. When a partial deficiency of the teeth is supplied with judgment and skill, it is a means of preserving the remaining natural teeth, by becoming a support to them. Ligature is injurious by its misapplication alone; it is, and must ever continue to be most useful to the Dentist for many purposes. When a few artificial teeth are to be supplied, they must either be pivotted to stumps, or attached to the adjoining teeth, by means of gold claws, or springs, or by means of ligature.

Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaptation of artificial teeth is an art in which some professors greatly excel others; there must, of consequence, be a variety in the value of their works. Some teeth are so ill made, and unskilfully adapted, that they are troublesome to the wearer, an impediment to speech and mastication, and even a greater blemish to the countenance than the want of teeth; those that are well adapted are, on the contrary, easy, useful, and ornamental.

OF ARTIFICIAL PALATES.

Happily for mankind the disorders by which the palate is liable to be destroyed, are neither so frequent, nor so virulent, as they were some years ago, owing to the great improvements which have been made in medicine and surgery. Cases in which artificial palates become necessary are not common.

The palate bones are sometimes naturally imperfect. When the palate is perfora , either by nature or from disease, the speech is rendered inarticulate, and the tone of voice is lost in nasal sound. To remedy this defect, and to prevent the inconvenience arising from food getting through the aperture, artificial palates were constructed. The usual mode of making artificial palates is by a thin plate of gold or

silver, made convex, and so fitted as to cover the orifice. This plate is secured in its place by means of a sponge.

The best way of remedying a defective palate is by a double plate, one of which, covers the internal, and the other the external surface of the orifice. The internal plate is formed of two sides, or flaps, which, by means of a hinge, or joint, are raised and so let into the aperture; when the flaps are again let down, they are confined by a cross bar contrived to turn on them by a pivot from the opposite side.

Palates are also fixed in by gold bands to the natural teeth. In either of the last-mentioned modes the sponge is dispensed with, which is certainly a great advantage, for by imbibing the mucus narium it becomes foul, and taints the breath.

The wearer of a false palate with a sponge should be careful to keep it clean, and to renew the sponge when necessary.

OF THE

PHYSIOGNOMY OF THE TEETH,

AND OF THE

PROJECTING CHIN.

OF THE PHYSIOGNOMY OF THE TEETH.

The effect of the teeth, in giving character and expression to the human countenance, has been remarked by most physiognomists, ancient as well as modern; and both have attributed certain dispositions of mind, to certain kinds of teeth. That the teeth have a great effect upon the expression of a countenance, is unquestionable; but I will venture to assert, that the theory of physiognomy, as far as it relates to the teeth, and in most instances to the projecting chin, is extremely fallible: the conclusions drawn from physiognomical remarks upon the expression of both must of consequence be unjust.

The often repeated indulgence of any particular passion, may give to a countenance a cast expressive of that passion;

but no action or disposition of the mind can have the least tendency to make the teeth long, or short, to regulate their order, or to render them sound and beautiful.

The learned and scientific Lavater insists much on the characteristics of the teeth and chin. His ingenious and beautiful system has many favourers. It is foreign to my purpose to consider either the truth or fallacy of his general system of physiognomy, nor is it my intention to derogate from its merit; but as his arguments upon the characteristics of the teeth, and of the projecting chin, are certainly founded in error, and as, in the exercise of my profession, I have daily proofs of the injustice of attributing certain passions and dispositions of mind, to persons possessing certain kinds of teeth, I feel it a duty to endeavour to rescue many worthy and amiable people, who have bad or irregular teeth, from the unjust odium cast upon them by the disciples of Lavater.

I shall here give some of the principal of his observations upon this subject, and then hope to shew that they are erroneous.

" Nothing is more certain, more strik-
" ing, or continually visible, than the cha-
" racteristics of the teeth, and the manner
" in which they display themselves.

" Small, short teeth, which have generally
" been held by old physiognomists to de-
" note weakness, I have remarked in adults
" of extraordinary strength, but they sel-
" dom were of a pure white.

" Long teeth are certain signs of weak-
" ness and pusillanimity.

" White, clean, well arranged teeth, visi-
" ble as soon as the mouth opens, but not
" projecting, nor always entirely seen, I
" have never met with in adults, except in
" good, acute, honest, candid, faithful men.

" I have also met foul, uneven, and ugly
" teeth, in persons of the above good cha-
" racter; but it was always either sickness,

" or some mental imperfection, which gave " this deformity.*

" Short broad teeth, standing close " to each other, shew tranquil, firm " strength.†

" Melancholy persons have seldom well " arranged, clean, white teeth."‡

There is no doubt but that the above appearances excited in the mind of Lavater the ideas of the mental qualities he ascribes to them, and that they make the same impressions on other readers of the human countenance; but those who study the history of the teeth will know that the unworthy and profligate may possess those external marks which Lavater attributes to the *good*, *acute*, *honest*, *candid*, and faithful disposition of the mind, in common with those who really possess the amiable quali-

* Lavater's Physiognomy, octavo edition, vol. 3. p. 195.

† Page 77. ‡ Page 246.

ties of which he says they are the symbols.

Foul, uneven, ugly teeth are also as frequently seen with persons of the most amiable disposition, who have no *mental imperfection*, nor any malady except that which may arise from the state of the teeth.

Foul teeth are certainly ugly; and those who make no attempt to keep their teeth clean, undoubtedly betray great negligence of character, and may, without injustice, be suspected of not possessing a taste for cleanliness or delicacy.

Well arranged teeth are justly esteemed a beauty, and irregular teeth a deformity; but it is a deformity which is produced by physical, and not by mental causes.

The general causes of the irregularities of the teeth have been already pointed out in the chapter on that subject; it would, therefore, be superfluous to repeat them. It has also been remarked that the size of

the teeth depends on the quantity of ossific matter deposited for their formation; their size must consequently be determined long before the actions or passions of the mind begin to develope themselves; and hence it is evident that the mind cannot influence the length or breadth of the teeth. The size and shape of the teeth cannot, therefore, be a more just criterion by which to judge of the mental qualities of individuals, than the variations of personal height or circumference.

In the glowing pages of the philosophic Herder are many observations upon the physiognomy of the human teeth; but they are founded as much in error as those of Lavater. Neither Lavater, Herder, nor any of the physiognomists, seem to have been acquainted with the physiology of the teeth; their observations should, however, by no means be disregarded; they tend to prove the importance of good, clean, and even teeth; and it is also certain from

them, that bad, foul, and irregular teeth, give to a countenance an effect so peculiarly unpleasing, as to lead an observer to suspect something wrong in the mind.

Those kinds of teeth which are held by physiognomists to be indicative of the character of different nations, may all be observed in different individuals of the same country: for example, the well arranged teeth of the Spaniards; the long and separated teeth of the Tartars; and the extremely white teeth of the Hottentots, are all to be found with the natives of Great Britain. The appearance of the teeth cannot, therefore, be a more true mark of national than of individual character.

Most civilized nations agree in considering *soundness*, *whiteness*, and *regularity*, essential to beautiful teeth. There are some nations, however, of a different opinion, and think that, in order to be beautiful, the teeth cannot be too black. The Ladies of the Marian Islands blacken their

teeth. The Tonquinese and Siamese employ every art for the same purpose. The inhabitants of Sumatra and Malacca also blacken their teeth. Father Tachard says, that these people blacken their teeth, from an idea that man ought not to have white teeth, like brutes.

The married women of Java dye their teeth black, which we may suppose is intended as a mark of distinction. In some other of the East India Islands the inhabitants gild the two front incisores of the upper jaw, and blacken the adjoining teeth.

Many savage tribes have modes peculiar to themselves of ornamenting their teeth; and some offer their front teeth as a sacrifice to their gods.

The Abyssinian Negroes take off the corners of their front teeth, and make them spear pointed: the Malay Indians cut a groove across the incisores of the upper jaw: they also grind the cutting edges of their teeth with a stone, till they become all of an equal length.

The natives of Hindostan, the Bramins in particular, are extremely delicate in every point relating to the teeth; every morning when they rise, they rub them for upwards of an hour together with a twig of the racemiferous fig-tree, at the same time addressing their prayers to the sun, and calling down the blessing of heaven on themselves and their families. As this practice is prescribed in their most ancient books of law and divinity, we may imagine it coeval with the date of their religion and government. It exhibits a curious proof of the regard which this polished and scientific people had for the purity and beauty of the mouth, when so simple a practice is inculcated as a law, and rendered indispensible as a religious duty. The reddish cast which the constant use of the betel and areca nut, gives to the teeth of both sexes in India, though now considered as a beauty, does not seem to have been always regarded as such, since in their poetical works, the lover,

enumerating the charms of his mistress, never fails to notice, as a principal attraction, the *whiteness* and regularity of her teeth.

" The cunda-blossom yields to the *whiteness* of the teeth."

" Speak but one mild word, and the rays of thy *sparkling* " teeth will dispel the gloom of my fears."*

Such images as these frequently occur in the Indian Poets.

A very whimsical custom with respect to the mouth is practiced by the inhabitants of Prince William's Sound. These people appear at first sight to have two mouths. They make an incision in the under lip, parallel with the mouth, sufficiently large to admit the tongue through. When the sides of the incision are healed they have very much the appearance of lips. In this artificial mouth they wear a shell, which is cut to resemble a row of teeth.

These different customs prove that the

* Gitàgovindà.

most polished and the most savage nations agree in attaching a high degree of importance to the teeth, which is evinced by some considering their preservation and cleanliness as a religious duty, and others offering some of their principal teeth as a sacrifice to their deities.

Lavater extends his physiognomical remarks on teeth, even to those of brutes. Of the river horse Behemoth, he says, "How stupidly savage and inexorable! "How irregular are the position and "figure of the teeth! How peculiar the "character of satanic, but foolish self-de- "structive malignity."

"The crocodile proves how very phy- "siognomical teeth are."

Of the sheep, "There is as little wildness "in the line of the mouth, as in the form "and position of the teeth."

It is certain that the "countenance is "the theatre on which the soul exhibits "itself;" but it is the action of the muscles

of the face which gives to it the expression of the inward workings of the mind, and not the size, form, or position of the teeth. The same countenance may one moment express the ferocity of the tyger, or the most inexorable, savage stupidity, and the next, exhibit the meekness of the lamb, and this without any alteration in the teeth. How then are the teeth so very physiognomical?

How unreasonable, how uncharitable, as well as unjust, would it be to suspect all those, who have irregular teeth, of possessing the horrid disposition attributed to the river-horse*; or to bar our doors against those who have long and separated teeth, lest they should prove robbers, like the Tartars.

The case is different with respect to beauty and deformity; no countenance, I

* Naturalists and travellers, who have observed this curious animal, give it a very different character; they say it is timid, mild, peaceable, and easily tamed.

believe, can be beautiful, with foul, unsound, or irregular teeth. Nothing, indeed, can be more disgusting than the laugh of a person who, on opening the mouth, exhibits foulness and deformity. It will ever be the happy lot of a beautiful, or pleasing countenance, to conciliate affection, and to impress an idea of perfection of mind on the beholder; whilst, on the contrary, deformity, and personal neglect, as surely alienate the affections, and create, however unjustly, a suspicion, at least, of equal deformity of mind. It is most undoubtedly a duty we owe to ourselves, and to society, to render our persons as pleasing as possible.

The justness of the following assertion of Lavater will not, I think, be disputed; it is evidently made from observations on the personal habits of mankind.

" As are the teeth of man, that is to say
" their form, position, and cleanliness (so
" far as the latter depends upon himself) so
" is his taste."

OF THE PHYSIOGNOMY OF THE PROJECTING CHIN.

The projecting chin is a deformity often produced by the accidental derangement of the permanent teeth, at the time of their protrusion through the gums.

Physiognomists agree in passing a severe judgment on the projecting chin; they attribute to the possessor a brutal disposition. Herder says, "a deformity in the chin is, "indeed, much to be dreaded." They argue from analogy: the projecting chin causes the mouth to come forward, and thereby makes the facial line approach to the physiognomy of a brute. Herder observes, that "the mouth in quadrupeds "(except the elephant), particularly of the "carnivorous kinds, constitutes the predo-"minant part of the visage;" and, on enu-

merating the gradations of organization, from the larvæ of insects up to man, he says, " at length, with the erect position of " man, externally, the mouth, always the " most prominent part in the head of the " beast, recedes under the higher organiza- " tion of the brow."

Sometimes the projecting chin is caused by a naturally disproportionate enlargement of the under jaw.

I know the child of a Gentleman, a boy of four years old, whose under jaw is naturally too large in proportion to the upper, the chin consequently projects, and the incisores of the under jaw are more forward than those of the upper. I never knew a child of a more mild and amiable disposition.

It cannot be denied that this species of the projecting chin gives a stern and determined character to the countenance, and seems to justify Lavater's observation, that

" the projecting chin ever denotes some-
" thing positive, and the retreating some-
" thing negative:" but here again the mind is guiltless, as the proportion of the jaw bones was determined before the mind had attained to any power.

The natural conformation of the jaws more frequently produces the receding, than the projecting chin. The latter, however, is the more common, as it frequently originates in a derangement of the teeth. The receding chin is as much out of the line of beauty as the projecting, and has an equal right to be considered a deformity.

There are various gradations of the projecting chin: as when the under jaw is a little too large, and the incisores do not slide over each other like scissors, but rest their cutting edges on each other, and when they slide over each other in a very small degree. In the former case the edges of the teeth are worn down in mastication, and in the

latter the anterior edges of the incisores of one jaw, and the posterior edges of the other are soon worn to the bone.

I am acquainted with two sisters, the formation of whose mouths, and the position of whose teeth, are such as have not, I believe, been noticed by any physiognomist. They have not the power of closing their mouths sufficiently to bring the incisores of the upper and under jaw in contact; they cannot be made to approach by the eighth of an inch. Their teeth are of a good size, and well arranged, and the molares rest on each other at either side. It appears that the articulating processes are unusually short, and the jaw consequently hung so high behind, that the teeth in front of the mouth cannot touch. These cases are not the consequences of mental qualities, any more than the varieties we daily see in the form of mouths, or in the size and beauty of teeth.

As great a variety may be observed in

the form and dimensions of the upper as of under jaw. Among a number of models which I have made from nature, of the inside of the upper jaw of adults, the smallest I find is one inch and a quarter, measuring across from the dens sapientiæ at each side, (but not including those teeth); the largest is two inches. This variety in the size and form of the jaw bones cannot, I imagine, be accounted for, any more than can the difference in the size, and proportions of men. To search for the cause of either in the qualities and disposition of the mind, would, without doubt, be absurd.

FINIS.

T. Harper, Jun. Printer, Crane Court, Fleet Street, London.